



# Cornell University

ANNOUNCEMENTS

## College of *Arts and Sciences*

1967-68



Cornell University

College of  
*Arts and Sciences*

1967-68

# Academic Calendar

	1967-68	1968-69
Registration, new students	F, Sept. 8	F, Sept. 13
Registration, old students	S, Sept. 9	S, Sept. 14
Fall term instruction begins, 7:30 a.m.	M, Sept. 11	M, Sept. 16
Midterm grade reports due	S, Oct. 21	S, Oct. 26
Thanksgiving recess:		
Instruction suspended, 1:10 p.m.	W, Nov. 22	W, Nov. 27
Instruction resumed, 7:30 a.m.	M, Nov. 27	M, Dec. 2
Fall term instruction ends, 1:10 p.m.	S, Dec. 16	S, Dec. 21
Christmas recess		
Independent study period begins	W, Jan. 3	M, Jan. 6
Final examinations begin	M, Jan. 8	M, Jan. 13
Final examinations end	T, Jan. 16	T, Jan. 21
Interession begins	W, Jan. 17	W, Jan. 22
Registration, new students	F, Jan. 26	F, Jan. 31
Registration, old students	S, Jan. 27	S, Feb. 1
Spring term instruction begins, 7:30 a.m.	M, Jan. 29	M, Feb. 3
Deadline: changed or make-up grades	M, Feb. 5	M, Feb. 10
Midterm grade reports due	S, Mar. 9	S, Mar. 15
Spring recess:		
Instruction suspended, 1:10 p.m.	S, Mar. 23	S, Mar. 29
Instruction resumed, 7:30 a.m.	M, Apr. 1	M, Apr. 7
Spring term instruction ends, 1:10 p.m.	S, May 11	S, May 17
Independent study period begins	M, May 13	M, May 19
Final examinations begin	M, May 20	M, May 26
Final examinations end	T, May 28	T, June 3
Commencement Day	M, June 3	M, June 9
Deadline: changed or make-up grades	M, June 10	M, June 16

## CORNELL UNIVERSITY ANNOUNCEMENTS

Volume 58. Number 16. April 12, 1967. Published twenty times a year: four times in August; twice in March, April, June, July, September, and October; once in January, February, May, and December; no issues in November. Published by Cornell University at Edmund Ezra Day Hall, 18 East Avenue, Ithaca, New York 14850. Second-class postage paid at Ithaca, New York 14850.

# Contents

2	ACADEMIC CALENDAR
5	COLLEGE OF ARTS AND SCIENCES
6	The Curriculum
6	Admission
8	Advanced Placement
9	Advising
9	Registration in Courses
10	Requirements for Graduation
12	The Foreign Language Requirement
14	Grades and Academic Standing
15	Leaves of Absence
15	Credit for Summer Session
16	Important Dates, 1967-68
16	Special Programs
18	The Libraries
18	Scholarships
22	COURSES OF INSTRUCTION
22	The Freshman Humanities Program
28	American Studies
28	Anthropology
37	Asian Studies
48	Astronomy
50	Biological Sciences: Animal Physiology and Anatomy; Behavior; Biochemistry; Botany; Ecology, Evolution, and Systematics; Genetics and Development; Microbiology
73	Chemistry
83	The Classics
88	Comparative Literature
93	Computer Science
98	Economics
107	English
121	Geological Sciences
128	German Literature
128	Government
137	History
149	History of Art
156	Mathematics
170	Modern Foreign Languages and Literatures: Burmese, Cebuano, Chinese, Czech, Dutch, English as a Second Language, French, German, Hindi, Indonesian, Italian, Japanese, Javanese, Linguistics, Portuguese, Quecha, Russian, Serbo-Croatian, Sinhalese, Spanish, Tagalog, Telugu, Thai, Urdu, Vietnamese
209	Music
214	Philosophy
220	Physics
232	Psychology
242	Romance Studies
243	Russian Literature
243	Semitic Languages and Literatures
247	Sociology
258	Theatre Arts
264	Interdepartmental Courses
264	Latin American Studies
264	The Six-Year Ph.D. Program
269	Society for the Humanities
271	FACULTY

The courses and curricula described in this Announcement, and the teaching personnel listed therein, are subject to change at any time by official action of Cornell University.



# Cornell University

## COLLEGE OF ARTS AND SCIENCES

The College of Arts and Sciences reflects the history and aims of the University itself. Purposeful and diverse, it is a liberal arts college, a university college, and a graduate school and research center. The role of the liberal arts college is traditionally and properly a double one. It should further a man's understanding of himself and the world he lives in. It should prepare him, if he has the desire and the talent, for further, more specialized study. All of the College's students have both opportunity and obligation to work towards that understanding; about two-third of its graduates continue their education.

The College of Arts and Sciences, in its second role as a university college, is responsible for the education of all Cornell students in liberal subjects. This is a taxing commitment, but a valuable one because meeting it helps to create and preserve a single academic community. At the same time, this obligation is also a source of strength and diversity that is not available to the single and solely undergraduate college. A university college, able to draw upon the more highly specialized knowledge and facilities of its more professional fellow colleges, is able to unite liberal and practical studies.

The College is also, and this is its third role, a graduate school and research institute. Teaching and scholarship are not separable activities. Their vigorous and inventive association provides inestimable advantages for undergraduates; it attracts fine minds to the faculty and keeps them professionally alert and humanly responsive; it demands first-rate facilities; and it creates an atmosphere of discovery and excitement.

This mixed character and these several functions are surely the most adequate way to meet the real obligations that higher education in America has assumed. In an American university each student must somehow receive an education which enables him to understand the world and effectively employ his talents in it; each must discover who he is and what his special interests and abilities are; each must be enabled to develop his knowledge, his interests, and his abilities; each

must be helped to a sense of responsibility about himself and his work.

The College of Arts and Sciences thinks it can best meet these obligations by promoting diversity and permitting flexibility. For students this means freedom and continuity: freedom to experiment, to discover one's likes and talents, to change directions and correct mistakes; continuity so that experiment can take place without penalty, and with profit and excitement. Combination permits continuity; diversity permits freedom of educational choice.

## THE CURRICULUM

The College's curriculum gives the student opportunity for breadth, experiment, and discovery, especially during the first two years. A certain diversity is indeed urged upon him by the Distribution requirement itself. When the student explores a new subject matter he is, in effect, exploring his own latent interests and abilities. As he completes introductory courses the student lays the foundation for more advanced work or even for majoring in particular fields. During his fourth term (or earlier), as his interest comes to a focus, he chooses the subject in which he wishes to concentrate his study, aiming at depth and competence. The usual pattern is for him to devote roughly half the work of the last two years to his major program. Though certain core courses are usually prescribed in any major, there still remains a broad spectrum of choice which includes related courses in other subjects or even in other divisions of the University. Some departments offer two major programs: one, a program of intense and sophisticated preparation for postgraduate study; the other, a more general program for the person who wants a liberal education with some specific concentration, but whose interests are not professional.

Almost all departments have a full, demanding, and rewarding honors program for those who demonstrate particular ability during their first two years. Many departments have as part of their honors programs (or in addition to them) specially directed courses and projects which permit students to pursue their own interests and talents.

The College periodically offers experimental courses that cut across subject lines, explore new notions, and test ideas arising from that complicated triangulation that must go on between teacher, student, and subject.

Study abroad during the junior year is permitted by the College under special conditions and upon recommendation of the student's department.

## ADMISSION

The College of Arts and Sciences attempts to select a freshman class whose members are individually able to take full advantage of the educational opportunities afforded by the College and the University. Because those opportunities are rich and diverse, no single criterion is



employed. The College selects primarily for what Aristotle called the intellectual virtues, and it especially considers academic ability, intelligence and creativity, independence and maturity, and promise of mental growth. It also seeks a class with a wide range of other qualities and characteristics, and it honors those young men and women with highly developed special interests and talents. Furthermore, the College is making a real effort to identify and admit students whose schooling and family backgrounds indicate that the standard measures are a poor index of their abilities.

An applicant must have completed a secondary school course giving satisfactory preparation for the work of the College. Sixteen units of entrance credit are required, including four years of English, three years of preparatory mathematics, and three of a foreign language, ancient or modern. (A student who can offer only two years or less of a foreign language but who has a school record of high quality should not hesitate to apply. He should attach a letter to his application form explaining the deficiency.) The remaining units should be chosen from laboratory science, social studies, and further work in mathematics and foreign language. Whenever possible, these sixteen units should be supplemented by courses in similar academic subjects. Exceptions to these requirements may be granted when the applicant's record is unusually promising.

Each candidate for admission is required to take by January of the senior year the College Board Scholastic Aptitude Test and the College Board Achievement Test in English composition. He is encouraged, but not required, to take other Achievement Tests of his choice. He should request the College Board to send the results to the Office of Admissions, Cornell University.

Although an Achievement Test in language is not required for admissions consideration, a candidate should, before entering Cornell, take the College Board Achievement Test in any language which he has had in high school and expects to continue in the College. Because the score on such a test is needed for placement in language courses, the test should be taken late in the senior year—in March, May, or even July. A candidate should also keep in mind the further language requirement which he must meet by the end of his sophomore year in the College. If he will be entering with two or more years of some language which he wishes to use toward fulfilling this requirement (see page 12) he should also take the Achievement Test in that language even though he does not plan to continue it in college. This score will determine whether in the tested language he has met part of the requirement for graduation.

Scores on these various admissions examinations provide no index at all for some qualities and only a rough index for others. But common sense suggests, and experience has shown, that high scores (above 700) tend to be linked with academic success and low scores (below 550) with academic risk in the College of Arts and Sciences.

An applicant for admission who has completed a year or more of work in another institution of recognized collegiate rank will be expected to have had preparatory work equivalent to that prescribed for

freshmen. In addition, his progress in meeting the Distribution and language requirements will be carefully examined. Action on completed applications for transfer will be taken about May 15. A student seeking admission to the College of Arts and Sciences from some other undergraduate division of Cornell must first complete a year of successful study in that division.

Application forms may be obtained from the Office of Admissions, Day Hall, and all communications concerning admission should be directed there. Applications must be returned to the Office of Admissions by January 15.

Beginning with the fall term, 1967, tuition in the College of Arts and Sciences will be \$787.50 a term, and the General Fee will be \$237.50 a term, making a total of \$1025.00 a term.

For information on other matters of general interest such as details about health services and requirements, housing and dining services, living expenses, applications for financial aid, and motor vehicle regulations, consult the *Announcement of General Information*. The various Announcements of Cornell may be obtained by writing to the Announcements Office, Day Hall, Ithaca, New York 14850, or by inquiring at the administrative offices of the several colleges and schools.

## Advanced Placement

Advanced placement and advanced standing credit toward the degree of Bachelor of Arts may be achieved by an entering freshman in a variety of subjects and in a variety of ways.

Both advanced placement and advanced standing credit may be earned by high attainment on the College Board Advanced Placement Examinations in the following subjects: American history, biology, chemistry, European history, German literature, Latin, mathematics, Spanish literature, and physics. (A student planning further work in mathematics must also take the departmental advanced placement examination.) Both advanced placement and advanced standing credit may be earned by high attainment on departmental examinations, given usually at entrance, in the following subjects: biology, chemistry, European history, mathematics, music, and physics.

In modern foreign languages, a student showing superior attainment on the College Board Language Achievement Test may be exempted from three or six hours of the requirement of advanced work after Qualification and receive three or six hours of advanced standing credit.

More detailed information about the possibilities and procedures of advanced placement is contained in *Advanced Placement of Freshmen at Cornell University*, available from the Office of Admissions, Day Hall.

A student may use his advanced standing credit to satisfy the Distribution requirement of the College. Advanced standing credit for a freshman is limited to 30 hours, including any credit for summer session study prior to matriculation.

A student admitted to the College of Arts and Sciences from another college of Cornell University, or from any other institution of collegiate

rank, will receive credit toward the degree of Bachelor of Arts for the number of hours to which his record may, in the judgment of the faculty, entitle him. Ordinarily the total may not exceed 60 hours. No more than 15 hours may be in courses not commonly given by the College of Arts and Sciences. In order, however, to obtain the degree of Bachelor of Arts, a student must, as a candidate for that degree, have been in residence at least two years in the College of Arts and Sciences, and in that college only.

## ADVISING

The counseling staff of the Dean's Office and certain designated faculty members act as advisers to freshmen and sophomores. Their role is to assist the student in his choice of studies, to advise him during the term regarding his work, and to provide him help with personal problems and the choice of a career.

At the time of acceptance into a departmental major, the student will be assigned an adviser in the department administering his major study. The major adviser will guide the student in his selection of courses, counsel him on matters affecting his academic work, and supervise his progress toward the degree.

All students are expected to show initiative in planning their programs and to assume a large measure of responsibility for their progress in meeting requirements.

## REGISTRATION IN COURSES

During a designated period each term, a student will, with the aid of an adviser, prepare a program of studies for the following term. For the academic year 1967-68 registration periods will be:

For fall term courses.....April 24 to May 5, 1967

For spring term courses.....October 23 to November 10, 1967

For late filing of a program of studies a fee of \$10 will be charged.

Failure to register during the announced period will be interpreted as intention to withdraw.

Every student must register in each term for at least 12 academic hours, exclusive of basic military training and physical education. The usual program for freshmen and sophomores will consist of five three-hour courses; juniors and seniors will usually carry a program of four four-hour courses. In order for a student to maintain satisfactory progress toward the degree, his program must average 15 hours a term. No student may register for more than 18 hours without special permission.

Program changes will be permitted, without petition or fee, upon recommendation of the adviser, prior to May 27 for the fall term and prior to December 16 for the spring term, and again during the first two weeks of instruction in each term. After the first two weeks of instruction any change will be subject to a \$10 fee and must have the

## 10 REQUIREMENTS FOR GRADUATION

approval of the Counseling Office. After the date for reporting midterm grades a course may be canceled for medical reasons only.

Freshmen will register by mail in the summer and may expect the necessary material by early June from the Counseling Office of the College of Arts and Sciences.

### Course Levels

Undergraduate courses are offered at four levels numbered as follows:

100-199. Introductory courses, primarily for freshmen and sophomores.

200-299. Intermediate courses, primarily for freshmen and sophomores.

300-399. Advanced courses, primarily for juniors and seniors.

400-499. Courses on the senior and graduate-student level.

## REQUIREMENTS FOR GRADUATION

### Residence

The degree of Bachelor of Arts will not be conferred upon any student who has not been in residence in Cornell during the last two terms preceding graduation and registered in the College of Arts and Sciences, nor upon any student who has not been in residence for at least two years as a degree candidate in the College of Arts and Sciences and in that College only. Students normally spend eight terms in residence and may not exceed this length of time without the permission of the Committee on Academic Records. A student in good standing who leaves his degree in abeyance should not expect a request for reinstatement to be considered after five years.

### Credit

For the degree of Bachelor of Arts, a candidate must have earned credit for 120 hours, of which 100 must be for courses in the College of Arts and Sciences. However, courses outside the College which are specified as meeting the requirements of his major program may be counted in the 100 hours. Basic courses in military, naval, or air science or in physical education may not be counted in the 120 hours. Advanced courses in those subjects may be counted, to the extent of twelve hours, among the twenty hours allowed outside the College.

### Other Requirements

A. FRESHMAN HUMANITIES. A student is required to complete in each term of his freshman year one of the courses specially designed

to provide discussion in small classes and to emphasize written discourse. The two courses need not be in the same subject, but they must be designated as meeting this requirement.

(For details see Freshman Humanities Program, page 22.)

*Note:* This requirement is not the same as the humanities requirement in Distribution. A course used in satisfying the Freshman Humanities requirement may not be used in satisfying the Distribution or the language requirement.

**B. FOREIGN LANGUAGE.** This requirement may be completed in ancient or modern foreign languages by (a) meeting prescribed standards in a single language, or (b) attaining Qualification in two languages, or (c) attaining Qualification in one language when the student has offered for admission three units of some other language taught at Cornell. By the end of his fourth term a student is to meet at least the level of Qualification in one foreign language. When a student has attained Qualification in one language and it is in his academic interest to delay completion of the language requirement until the junior year, his adviser may permit him to do so. However, it should be noted that any department may demand completion of the language requirement as one of the prerequisites for acceptance into its major.

For details see the section on Foreign Language Requirement below.

**C. DISTRIBUTION.** Each student must complete a six-hour sequence in four of the seven groups listed below, including one six-hour sequence in the physical or biological sciences, one in the social sciences or history, and one in the humanities or expressive arts. Courses used to satisfy the Freshman Humanities requirement or the language requirement may not be used to satisfy the Distribution requirement. The student is encouraged but not required to complete this requirement in his first two years.

For the *specific courses* designated as satisfying the requirement in the subjects listed below, one should consult the headnotes of the various departments in the Courses of Instruction section.

1. *Mathematics*
2. *Physical Sciences:* Astronomy, Chemistry, Geology, Physics
3. *Biological Sciences*
4. *Social Sciences:* Anthropology, Economics, Government, Linguistics, Psychology, Sociology
5. *History*
6. *Humanities:* Classics, Comparative Literature, English, Modern Foreign Literature, Philosophy, Semitic Literature
7. *Expressive Arts:* Advanced Composition (English 205-206), History of Art, Music, Special Forms of Writing (English 203-204), Theatre Arts

**D. THE MAJOR.** Each student must satisfy the specified requirements of the major as listed by his major department. The major in a subject is defined as including not only the courses in that department but also the courses in related subjects offered in satisfaction of the major requirements.

**E. PHYSICAL EDUCATION.** During the first four terms of residence each student must complete the University requirement of four terms of work in physical education.

**F. ELECTIVES.** Of the 120 required hours, each student must complete 15 hours in courses not offered in satisfaction of requirements (A) through (E) above, and not given by the department supervising his major.

## Foreign Language Requirement

In the ancient languages the level required in a single language is met in Greek by completing Greek 203; in Hebrew by completing Hebrew 204 or 302; in Arabic by completing Arabic 208. In Latin, students who are placed in 107 meet the requirement by completing two three-hour courses beyond 107; those who are placed in 201 by completing 201-202; those who are placed in 205 by completing 205.

Qualification in Greek is attained by passing Greek 103. Qualification in Latin is attained on the basis of the College Board Achievement Test, by passing Latin 107, or by placement in a course higher than 107. (For placement in Latin see below, under Classics, Latin, in the section Courses of Instruction.) Qualification in Hebrew is attained by completing Hebrew 201 or by examination. Qualification in Arabic is attained by completing Arabic 207 or by examination.

Satisfaction of the language requirement in a single modern language requires three hours of course work beyond Qualification.

Qualification in a modern language is a level of achievement defined by examination for those languages in which instruction is offered at Cornell. The examination may be the College Board Achievement Test, the placement examination administered by the Division of Modern Languages, or (for students in course) the final examination in Courses 102 or 112. It indicates that a student is ready to proceed to Courses 201 and/or 203. Students may attain Qualification in Burmese, Cebuano, Chinese, French, German, Hindi, Indonesian, Italian, Japanese, Javanese, Portuguese, Russian, Sinhalese, Spanish, Tagalog, Telugu, Thai, and Vietnamese. Qualification in two of these satisfies the language requirement.

Furthermore, a student who on entrance can show achievement well above the level of Qualification may receive three or even six hours of advanced standing credit in that language. This credit may be applied to reduce or complete the language requirement.

A student wishing to continue a modern foreign language begun in secondary school in which he has not taken a College Board Achievement Test must first take a placement examination given by the Division of Modern Languages. The examination will be given at the end of every semester and on October 11 and February 28 of the 1967-68 academic year.

A student who enters from a foreign country and whose mother tongue is not English may satisfy the foreign language requirement by

demonstrating competence in English, which shall be defined for the purpose as a modern foreign language.

## Bachelor of Arts with Distinction

The degree of Bachelor of Arts with Distinction in all subjects will be conferred upon those students who, in addition to having completed the requirements for the degree of Bachelor of Arts, (1) have received the grade of B— or better in at least ninety hours of courses, and of A— or better in at least sixty of these; (2) have not received a grade below C— in more than one course; (3) have received no failing grade. To qualify for the degree of Bachelor of Arts with Distinction in all subjects, a candidate must have completed at least sixty hours at Cornell in courses taught in the College of Arts and Sciences; and if he has received credit toward his degree for work done in another institution, the requirement of grades shall be prorated for the residue of work which must be completed in Arts and Sciences at Cornell.

## Bachelor of Arts with Honors

The degree of Bachelor of Arts with Honors will be conferred upon those students who, in addition to having completed the requirements for the degree of Bachelor of Arts, have satisfactorily completed the Honors program in their major subject and have been recommended for the degree by the department representing their major subject.

Honors programs are designed to free the exceptionally promising student for a substantial portion of his time from the ordinary requirements of academic courses in order that he may be able to broaden and deepen his understanding of the field of his special interest, to explore branches of his subject not represented in the regular curriculum, and to gain experience in original investigation. A candidate for the degree of Bachelor of Arts with Honors is usually required to pass a comprehensive examination in his major subject or to submit a thesis or some other satisfactory evidence of capacity for independent work. He may receive the degree with honors at one of three levels: *cum laude*, *magna cum laude*, or *summa cum laude*. When performance does not justify a degree with Honors, the student may receive course credit toward the degree of Bachelor of Arts.

To be eligible for admission to an Honors program, a student must have upperclass standing and a cumulative average grade of at least B—. A student who, after admission to Honors work, fails to maintain this average or for any other reason is found by his department to be unsuited to Honors work, will revert to candidacy for the regular Bachelor of Arts degree.

## GRADES AND ACADEMIC STANDING

Only freshmen will receive midterm grades. Final grades for courses range in descending order from A+ through D—, the lowest passing grade. F is a failing grade. No credit toward graduation will be given for a course in which a failing grade has been received, unless the course is repeated and a passing mark received.

Final grades of S or U may also be given in some courses. S means the student receives the credit specified for the course; U means no credit. In distinction from the grades A+ through F, the grades of S and U have no assigned numerical equivalents and will not enter into a student's grade average. In certain courses deemed by the College to require no greater precision of grading, all final grades will be S or U. Furthermore, an undergraduate registered in the College of Arts and Sciences may, after consultation with his adviser, elect to receive a grade of S or U instead of one of the letter grades (A+ to F) in one academic course a term, provided that the course is not offered in satisfaction of his major and provided that the instructor is willing to give grades of S or U. The student registers for the S or U option within the first two weeks of instruction by filing a permission card with the Scheduling Office. Any changes in exercising the option will be governed by the regulations applying to changes of course.

An *incomplete* is not a satisfactory grade. It is used to indicate that a course has been left incomplete with respect to specific assignments which may include the final examination. The mark of *inc* will be assigned only in case of illness or prolonged absence beyond the control of the student, and only when the student has a substantial equity in a course. A student will have a substantial equity in a course when the remaining work can be completed without further registration in the course and when he has a passing grade for the completed portion. A mark of *inc* may be removed, with the consent of the Dean and upon payment of the fee required by the University, by examination or otherwise as the department may direct. An incomplete that is not removed within one term will revert to a grade of F, unless an extension of time is granted by the Committee on Academic Records.

A student will be considered in good academic standing for the term if, taking a normal course load of at least fifteen hours, he receives no grade of F or U and receives no more than one D. If his record falls below this level he may be warned, placed on "final warning," or not allowed to register again in the College. Moreover, a student failing to make satisfactory over-all progress in grades, or in hours (whether from failures or "incompletes"), or in the requirements of the major may at any time be warned, placed on "final warning," or not allowed to register again in the College.

A student will not be allowed to register for a fifth term in the College (or for the first term of his junior year) unless he has been officially accepted into a major program of a department.



## LEAVES OF ABSENCE AND WITHDRAWALS

For reasons satisfactory to the Dean and the faculty, a student in good standing may be given a leave of absence for a definite or indefinite length of time. If, because of financial, family, or health reasons, a student is required to absent himself for a period of time, but with the expectation of returning, he should apply for a leave of absence. Leaves of absence for medical reasons are issued only upon the recommendation of the University Clinic. If a leave of absence is to take effect during the term in which the student is already registered, it must be requested by November 1 in the fall semester or April 3 in the spring semester. After those dates it will be granted only upon approval of the Committee on Academic Records.

No credit toward graduation may be earned while on leave of absence except in a limited amount by members of the armed services.

A withdrawal is a voluntary severance of a student's connection with the College. If it is to take effect during the term for which the student is already registered, it must be requested by November 15 in the fall semester or by April 15 in the spring semester.

## CREDIT FOR SUMMER SESSION

Summer session study serves various purposes: making up deficiencies, satisfying the prerequisite for a course given during the regular college year, gaining knowledge of some special subject matter, or enlarging one's choice of electives. Ordinarily summer study may not be substituted for courses in the major. Since the College discourages acceleration except for students in special programs (such as the Six-Year Ph.D. Program), which offer a carefully planned and supervised course of study, it limits the use of summer session for the purpose of achieving an earlier degree. Some allowance will be made for students entering with advanced placement credit. The use of summer session credit to complete a September degree is permitted only to students who have spent the normal eight terms in residence. More detailed regulations are printed on the Petition for Summer Session Credit which a student should file before he enrolls for summer study.

Courses may be taken in the summer before entrance, but these should be limited to the usual college introductory courses and will be subject to approval for advanced standing credit at matriculation. Summer courses taken after a student matriculates must be approved in advance for the particular purpose in mind.

No credit may be earned in a summer session of less than four weeks except by special permission; and no credit will be allowed for a course passed at less than a grade of C— or 70, or the equivalent.

Any student who undertakes summer session study without prior approval of his adviser, the department concerned, and the Dean does so without any assurance that he will receive academic credit.

## IMPORTANT DATES, 1967-68

	<i>Fall term</i>	<i>Spring term</i>
Registration for new students	F, Sept. 8, 1967	F, Jan. 26, 1968
Registration, continuing students	S, Sept. 9	S, Jan. 27
Instruction begins, 7:30 a.m.	M, Sept. 11	M, Jan. 29
Last day for changing courses without fee	S, Sept. 23	S, Feb. 9
Last day for dropping courses	S, Oct. 21	S, Mar. 9
Preregistration for 1967-68	(See below <sup>a</sup> )	
Modern Language Placement examinations	W, Oct. 11	W, Feb. 28
Last day for requesting leave of absence for current term	W, Nov. 1	W, Apr. 3
Last day for requesting withdrawal for current term	W, Nov. 15	M, Apr. 15
Last day for changing preregistration	S, Dec. 16	S, May 27
Final examinations begin	M, Jan. 8, 1968	M, May 20
Final examinations end	T, Jan. 16	T, May 28

<sup>a</sup>Preregistration for 1967-68:

For fall term courses, 1967

April 24-May 5, 1967

For spring term courses, 1968

October 23-November 10, 1967

## SPECIAL PROGRAMS

**THE SIX-YEAR Ph.D. PROGRAM.** For the exceptionally able and committed student who intends to go on to doctoral study in the liberal arts or sciences, Cornell offers a program leading to the A.B. degree in three years, the M.A. in four, and the Ph.D. in six. For details see page 264, at the end of the Courses of Instruction section.

*Certain other programs of study are available which do not in themselves lead to a degree but consist of an arrangement of optional courses constituting a useful adjunct to the student's regular major.*

**PREPARATION FOR TEACHING.** Teacher education at Cornell is under the general supervision of the University Committee on the Preparation of Teachers. Students planning to teach in the secondary schools may combine professional preparation with other prescriptions of the College in satisfaction of the requirements for graduation. A fifth year of preparation is required for the permanent certificate in New York State.

Students may qualify for the provisional certificate for teaching in New York State while they are completing the requirements for the A.B. degree in English, speech, foreign languages, sciences, or mathematics. In social studies a five-year program leading to a permanent certificate is offered for students majoring in history or one of the social sciences

Advice should be sought early regarding teaching opportunities in these subjects, combination of subjects usually required of teachers, choice of the major subject, and related matters.

Questions may be directed to 104A Stone Hall or to the faculty member in the student's department who is in charge of its teacher-training program. New students interested in teaching are requested to confer with the appropriate member of the committee in their first term of residence. (See also the *Announcement of the School of Education*.)

**INTERNATIONAL STUDIES.** Students interested in foreign area studies or in international problems will find that, though there are no formal programs in such subjects, appropriate courses of study can be selected from the regular offerings of various divisions of the University. For example, in the College of Arts and Sciences there are courses in comparative government, international relations, international law and organization, international economics, and the economics of development; they are listed under anthropology, Asian studies, economics, government, history, and sociology. There are also courses in over twenty modern foreign languages.

The College of Agriculture offers courses in the economics of agricultural development, international agriculture, and rural sociology. The School of Business and Public Administration offers courses in international development. The School of Industrial and Labor Relations offers courses in international and comparative labor relations.

The student seeking specialized foreign-area knowledge may focus on one of the following interdisciplinary area programs: Chinese Studies, Latin American Studies, and Southeast Asian Studies. In addition, it is possible for the student to pursue an area interest in African studies, European studies, South Asian studies, or Soviet studies.

**PREMEDICAL STUDENTS.** All premedical and predental students are requested to report once each semester to Professor L. L. Barnes, 121 Clark Hall, who is the chairman of the Premedical Advisory Board.

Certain minimum admissions requirements are prescribed by all medical schools. Since the most substantial of these requirements is in the field of chemistry, it is recommended that the freshman premedical student include chemistry in his course of study. Some freshman premedical students choose to take two sciences; either chemistry and biology or chemistry and physics. Students who plan to make biology their major subject will find it advantageous to include biology in their freshman programs.

Medical educators are quite generally agreed that when a premedical student is planning his college course, he should not allow his interest in science to exclude studies in the humanities. They are also agreed that it would be unfortunate for the future of medicine if all premedical students were to take the same premedical course or major in the same subjects.

The Premedical Advisory Board suggests that the freshman program include English composition (six hours), chemistry, and language.

**MILITARY TRAINING.** Programs leading to a commission are offered in military science, naval science, and aerospace studies (AF-ROTC). Twelve hours of credit for advanced courses may be counted among the twenty hours allowed outside the College. Full descriptions of the programs may be found in the *Announcement of Officer Education*.

## LIBRARIES

Cornell has eighteen separate libraries — two of them central and sixteen of them special and departmental. The central library's total holdings of more than three million volumes make it the seventh largest university library in the country; about a hundred and seventy thousand volumes are added each year. The College is the principal beneficiary of the two main libraries, the Uris Undergraduate Library and the Olin Research Library, which face each other on the south side of the Arts Quadrangle.

The prime aim of the Uris Library is to bring students and books as closely together as possible. Accordingly, the bookstacks, save for essential reserve books in heavy demand, are open to all readers. The holdings are selective rather than comprehensive. In addition to a reference collection of three thousand bibliographies, encyclopedias, handbooks, and dictionaries, and about two hundred and seventy periodicals, Uris contains about sixty-five thousand volumes for course reading or for general exploration and recreation. A suite of three listening rooms houses a large collection of records and tapes of poetry, drama, fiction, and other material in the spoken arts.

The John M. Olin Library is one of the country's major research libraries. The first floor and lower level contain the Reference and Circulation Departments, the Wason Collection (the most complete holdings of Asian materials in the country), the Rare Book Department, the Collection of Regional History and University Archives, and the Department of Maps, Microtexts, and Newspapers. The union catalog of all libraries on the Ithaca campus and the bibliography collection are on the first floor, near the center of the building.

The second through the seventh floors contain bookstacks and offices. They are reserved primarily for faculty, staff, graduate, and honors students, but undergraduates can easily and quickly obtain or discharge books at the circulation desk.

As a means of acquainting new students with its facilities and services, the library arranges for all freshmen to have a lecture-tour early in the fall term.

## SCHOLARSHIPS AND PRIZES

New York State offers various types of financial assistance to qualified college students who are state residents. It is very important that students seeking such aid obtain full information and meet promptly each application deadline.

**SCHOLAR INCENTIVE PROGRAM.** Applications should be filed before July 1 for each academic year but will be accepted up to December 1. Applications for the spring semester only have an April deadline. Annual application is required.

**REGENTS COLLEGE SCHOLARSHIPS FOR UNDERGRADUATES.** Candidates should seek directions from their high school principal and/or guidance counselor.

Information on all of the above may be obtained by writing to the Regents Examination and Scholarship Center, New York State Education Department, Albany, N.Y. 12224. Students seeking New York State guaranteed loans should apply to the New York State Higher Education Assistance Corporation, 159 Delaware Ave., Delmar, N.Y. 12054.

The scholarships listed *below* are open only to students of the College of Arts and Sciences. For these and others open to all students at entrance, a single application form accompanies the application for admission. Enrolled students may compete for prizes, which are described in a publication obtainable in the Scheduling Office of the College, Goldwin Smith Hall.

**THE DEAN'S SCHOLARSHIPS** are open to men and women entering the College of Arts and Sciences. The annual awards vary from \$100 to \$2050, depending upon financial need. The tenure is four years if the scholastic record of the recipient is creditable. At least twenty scholarships are awarded annually. Final selection and award are based upon academic promise, general character, and financial need. Preference will be given to candidates from areas not well represented in the present student body of the College of Arts and Sciences.

**THE SPENCER L. ADAMS SCHOLARSHIPS** (two scholarships) are open to freshman men. Annual award, \$800. Tenure is four years, providing academic standing in the upper fifth of the class is maintained. Preference will be shown to students majoring in the humanities, foreign language or economics.

**THE ELISABETH REAMER CARSON SCHOLARSHIP ENDOWMENT** was established by James H. Carson and Elisabeth Reamer Carson in 1958. Elisabeth Reamer Carson graduated in 1927. The scholarship is open to any student in the College. Annual award may vary from \$400 to \$1250. The scholarship may be held for four years. Financial need, academic promise, and general character will be considered in making the award.

**THE GEORGE C. BOLDT MEMORIAL SCHOLARSHIPS** (three scholarships) were created by George C. Boldt, Jr., as a memorial to his father. Each is worth \$500. They will be awarded at the close of the junior year to the three men students of the College who are considered most deserving of this aid. Applications for these scholarships must be filed in the Office of the Dean before March 15 of the academic year preceding the year for which they are awarded.

**THE CHESTER BUCHANAN MEMORIAL SCHOLARSHIP** is a gift of Mrs. Claire F. Buchanan, in memory of her son, Chester Buchanan. It carries an annual stipend of \$300. It is awarded each year on the recommendation of the Department of Geology to the outstanding male senior who is majoring in this subject.

THE CORNELIS W. de KIEWIET SCHOLARSHIP, established by members of the Board of Trustees in honor of the former Acting President of Cornell University, carries an annual award of \$500. It will be awarded to a student majoring in history who, at the end of his junior year, shows the greatest promise of creative work in history.

THE CORNELIA L. HALL SCHOLARSHIP, established by a gift of the late Mary F. Hall, is worth \$120. It is "open to any meritorious young woman of this State, who is pursuing the studies of the A.B. course and who is in need of financial assistance." Under the terms of the bequest, preference must be given to a suitable candidate from Tioga, Tompkins, or Chemung County; within this preferred class, women of senior or junior standing will be regarded as entitled to first consideration. Applications must be filed in the Office of the Dean before March 15 of the academic year preceding the year for which the scholarship is awarded.

THE GERTRUDE C. HEMINGWAY SCHOLARSHIP, amounting approximately to \$500, is awarded annually to "some deserving young woman student majoring in French, Spanish, or Greek language." Quality of work and financial need will be considered in making the award.

THE MYRTLE H. MILLER SCHOLARSHIP is open to men and women entering the College of Arts and Sciences. Annual award varies but may be as high as \$1200. Tenure is four years. One or more scholarships are available each year. Final selection and award are based upon academic promise, proficiency in mathematics, general character, and financial need.

THE MICHAEL W. MITCHELL MEMORIAL SCHOLARSHIP, initiated by Justice William O. Douglas and a group of his associates, carries a stipend of \$350. Under the terms of this bequest, the award is made upon the recommendation of the Chairman of the Department of Geology to a "student majoring in geology who proves himself adept in other liberal arts fields as well as geology—a student of the world."

THE HENRY L. O'BRIEN JR., SCHOLARSHIP, established by the W. Alton Jones Foundation, Inc., in 1953, as a memorial to Henry L. O'Brien, Jr., is worth \$885 a year. It is awarded to a male citizen of the United States entering the College of Arts and Sciences as a freshman. It may be retained for four years if his scholarship record is satisfactory. Character, scholastic ability, need, and participation in extracurricular activities will be considered in awarding the scholarship.

THE FREDERICK A. PEEK SCHOLARSHIP FUND is open to men and women entering this College. The annual award varies from \$100 to \$1500 according to financial need. The scholarship may be held for four years, provided the recipient maintains an average in the top half of the class. Financial need, academic promise, and general character will be considered in making the award.

THE FREDERICK A. RICE SCHOLARSHIP ENDOWMENT scholarship is gift of Frederick A. Rice, '09, and Mrs. Rice, and is open to men students in this College. The annual award is \$140, and the scholarship may be held for four years. Preference is given to candidates from California. Financial need, academic promise, and general character will be considered in making the award.

THE WINTON G. ROSSITER SCHOLARSHIP, worth \$250 is awarded annually to an outstanding senior in this College, who while earning a good part of his expenses through his own efforts, has nevertheless maintained a distinguished academic record and contributed substantially to the life of the University.

THE GENERAL MOTORS SCHOLARSHIPS were established by the General Motors Corporation in 1955. They are available to freshman men or women who are citizens of the United States and are entering this College. The tenure is four years, providing the recipient maintains an average which will place him in the top half of his class term by term. One scholarship will be available each year with a value of from \$200 to \$2000, depending on the demonstrated need of the individual. Final selection and award are based upon outstanding academic promise, general character, and financial need.

THE PROCTER AND GAMBLE SCHOLARSHIPS were established by the Procter and Gamble Fund in 1955. One of these scholarships is available each year to either men and women students entering this College. The annual award is designed to cover tuition, fees, books, and supplies. Tenure is four years, but to ensure continuance of the scholarship the recipient must maintain a term-by-term average in the top half of his class. Final selection is based upon academic promise and performance, general character, and financial need.

# COURSES OF INSTRUCTION

## THE FRESHMAN HUMANITIES PROGRAM

To replace its traditional freshman composition program, the University has recently inaugurated a series of small discussion and writing courses in the humanities which are jointly conducted by ten departments in the College of Arts and Sciences. The aim of the new program is twofold: to offer the incoming student a wide variety of subjects from which to choose, and to provide him with the opportunity of relating his written assignments directly to the subject-areas which primarily interest him. The courses are uniform only in the sense that all of them require intensive practice in composition and that the enrollment in each section is limited to 20 students.

To satisfy the Freshman Humanities requirement, each student must elect any two (but no more than two) of the courses which are described below. Students are expected to enroll in one of these courses during the fall semester and in another during the spring semester of their first year of residence. Unless otherwise noted, each course will be offered both in the fall and the spring. Each course carries three hours of credit. A course used in satisfying the Freshman Humanities requirement may not be used in satisfying the Distribution or language requirement. Supplementary information about the program and specific instructions about registration procedures will be mailed separately to all incoming freshmen in May or June.

### The Classics

Classical civilization Courses 119 and 120, though either may be taken separately, are designed to constitute a broad but carefully integrated introduction to the literature and thought of Greco-Roman civilization.

#### CLASSICS 119. FRESHMAN SEMINAR IN GREEK LITERATURE

Fall term. Mr. Spofford.

Readings, in translation, of Hesiod's *Theogony* and *Works and Days*, Aeschylus' *Oresteia*, Sophocles' *Oedipus Tyrannus*, Plato's *Euthyphro*, Homer's *Iliad* and *Odyssey*, Apollonius' *Argonautica*. Discussion and frequent essays.

#### CLASSICS 120. FRESHMAN SEMINAR IN LATIN LITERATURE

Spring term.

Readings, in translation, of selected major works of Latin prose and poetry. Discussion and frequent essays.

### Comparative Literature

#### COMPARATIVE LITERATURE 101. FRESHMAN SEMINAR IN WESTERN LITERATURE (I)

Fall term.

Informal discussion of selected great books of the Western tradition,



chiefly poetic masterpieces. The reading will include such works as the *Iliad*, selections from the Bible, the *Divine Comedy*, *Paradise Lost*, and *Faust*.

#### COMPARATIVE LITERATURE 102. FRESHMAN SEMINAR IN WESTERN LITERATURE (II)

Spring term.

Emphasizes major works of the drama and of fiction, from the Ancients to the present. Readings in the Greek tragedies, *King Lear*, the plays of Molière, *Madame Bovary*, *Notes from Underground*, stories by Kafka, and Camus' *The Stranger*.

COMPARATIVE LITERATURE 103-104. (See German, page 26.)

## English

#### ENGLISH 131. EXPERIENCE AND EXPRESSION

Mr. Slatoff and others.

Practice in the art of imaginative expression and attempts to explore the nature of that art. Students will write original works of poetry, fiction, and the more personal kinds of exposition, and examine the language, rhetoric, and style of their own work as well as the work of established writers.

#### ENGLISH 133. CRITICISM AND EXPERIMENT

Miss Barish and others.

A study of selected masterpieces from Shakespeare to the present, the course seeks to discover the ways in which writers succeed in convincing the reader that what is being said matters. Close analysis of works by Keats, Mark Twain, Joyce, and Hemingway, to be followed by creative experiments in forms ranging from exposition to lyric and short story.

#### ENGLISH 135. THE RHETORIC OF EXPOSITION

Messrs. Gottschalk, Hertz, and others.

Designed primarily to give the student practice in writing expository prose. Attention will be paid to description, argument, research, and to aspects of organization and idiom. Much of the class time will be given to the students' own work.

#### ENGLISH 137. POETRY

Mr. Fike and others.

Introduction to the forms, techniques, and values of poetry. Study and discussion will focus upon outstanding English and American poems, both early and modern.

#### ENGLISH 139. COMEDY AND TRAGEDY

Mr. De Luca and others.

Forms of tragic and comic literature from Sophocles to Samuel Becket. Readings in both drama and the novel. Texts include *Oedipus*, *Othello*, *Volpone*, *Wuthering Heights*, and *Waiting for Godot*.

#### ENGLISH 141. BIBLE AND ANCIENT AUTHORS

Mr. R. M. Adams and others.

Informal discussion of selected books from the Old and New Testaments, considered both as literature and moral teaching. Some of the major cycles of classical and Norse mythology will also be studied.

## 24 THE FRESHMAN HUMANITIES PROGRAM

### ENGLISH 143. MASTERPIECES OF ENGLISH LITERATURE

Mr. R. M. Adams and others.

Study and informal discussion of selected English masterpieces from the Middle Ages to the present, including works by Chaucer, Milton, Pope, Blake, and others. Unlike the introductory survey courses in English, English 143 is designed as a "Great Books" course, in which a few major texts will be closely studied in their entirety.

### ENGLISH 145. AMERICAN LITERATURE AND VALUES

Mr. Elias and others.

A study of American ideals as expressed in fiction, drama, poetry, and essays. Emphasis on issues which characterize the post-Civil War period; but the readings, exploring implications for our own time, will range from Emerson's essays and Twain's *Connecticut Yankee* to Anderson's *Winesburg, Ohio*, Dreiser's *An American Tragedy*, Eliot's early poems, and Miller's *Death of a Salesman*, and will include Carl Becker's *Cornell University: Founders and the Founding*.

### ENGLISH 147. HUMANISM

Mr. Barry Adams and others.

Study and informal discussion of major books concerned with man, man's nature and his potentiality, written during the flowering of Humanism in the West. Readings in both English and Continental literatures, including Machiavelli's *Prince*, Leonardo's *Notebooks*, *Essays* by Montaigne and Bacon, More's *Utopia*, as well as English Renaissance dramas.

### ENGLISH 149. THE SEARCH FOR ORDER

Miss Anderson and Mr. McMillin.

Literature and man's search for meaning in the Renaissance and twentieth century: social, moral, and scientific perspectives in major literary forms. Readings will include *Everyman*, Jonson's *Volpone*, *King Lear*, Hemingway's *In Our Time*, poems by Yeats, Frost, Eliot; and Beckett's *Waiting for Godot*.

### ENGLISH 151. SHAKESPEARE AND DICKENS

Mr. Gottschalk and others.

Intensive study of some five plays and three or four novels. The point of singling out Shakespeare and Dickens is not to force comparisons, but to encourage a near acquaintance with two great writers, to study the drama and novel as literary forms, and to examine the different attitudes and world views implicit in these works. Texts: *Richard III*, *Merchant of Venice*, *Hamlet*, *Macbeth*, *Lear*; *Oliver Twist*, *Bleak House*, *Great Expectations*.

### ENGLISH 153. THE LITERATURE OF REASON AND UNREASON

Mr. Shinagel and others.

Intended as a study of prose forms dominant in the eighteenth century (satire, imaginary voyage, autobiography, realistic fiction), the course will consider a few major texts of the period and seek out comparable forms in modern literature: *Robinson Crusoe*, *Castaway*, and *Lord of the Flies*; *Gulliver's Travels* and *Animal Farm*; *Tom Jones* and *Augie March*; autobiographical writings of Bunyan and Baldwin.

### [ENGLISH 155. LITERATURE AND SOCIETY]

Not offered in 1967-68.

## ENGLISH 157. AMERICAN FICTION AND CULTURE

Messrs. Colacurcio and Frederick.

Study and informal discussion of nineteenth-century American novels which comment significantly on emerging patterns of American manners and morals. The novelists to be studied include Cooper, Hawthorne, Melville, Howells, and James.

## ENGLISH 159. POLITICS, LANGUAGE, AND LITERATURE

Mr. Archibald and others.

A study of the language and rhetoric occasioned by political events, past and present. Writing of different kinds and intentions (from the *New York Times* to the works of Whitman, Yeats, Orwell, and Hemingway) will be read in an effort to discover what prose style can tell us about the author's motives and character. Written exercises in analysis, argument, autobiography.

## ENGLISH 161. CHARACTER AND VOICES

Miss Marks and others.

The aim is to examine how a number of important writers (Shakespeare, Donne, Austen, Conrad, Eliot) create the personalities of their speakers, narrators, or characters in drama, poetry, and fiction. Students will experiment with the creation of characters and analyze their own writing in the light of the assigned texts.

## ENGLISH 163. RELATIONSHIPS AND THE CREATIVE PROCESS

Mr. McConkey and others.

A study of writing emphasizing the writer's need to find analogies and other relationships in the seemingly disparate materials he works with. Readings will include stories (Chekhov), poems (Herbert and Yeats), essays (Agee and Camus), plays (Sophocles). Views on imagination and the creative process by Coleridge, Henri Poincaré, William James, and Frost will be discussed.

## French

## FRENCH 205. CONFESSIONAL WORKS IN FRENCH LITERATURE

Fall term. Qualification in French required. (For definition of Qualification see page 12.) Mrs. Parrish.

Readings in Montaigne, St. Thérèse, Rousseau, and Gide. A study of the confessional impulse in literature leading to a sharper definition of such works and relating them to other works normally found under the heading of autobiography, memoirs, and journals. Readings in French, discussions and papers in English.

## FRENCH 206. SARTRE AND CAMUS

Spring term. Qualification in French required. (For definition of Qualification see page 12.) Mrs. McCall.

Readings in the major literary works of Sartre and Camus, with reference to the political and philosophical background.

## FRENCH 208. THE RENAISSANCE IN FRANCE

Spring term. Qualification in French required. (For definition of Qualification see page 12.) Mr. Cave.

## 26 THE FRESHMAN HUMANITIES PROGRAM

A study of the major developments in French literature and thought in the sixteenth century, with special reference to Marguerite de Navarre, Rabelais, Montaigne, Ronsard, and Du Bellay. Works will be read in French; discussions and papers to be in English.

### German

#### COMPARATIVE LITERATURE 103. FRESHMAN SEMINAR IN GERMAN LITERATURE (I)

Fall term. Mr. Connor and Mr. Muschg.

Discussion and reports in small sections, with emphasis on written work. Topic for fall term: Modern Drama. Works by Buechner, Ibsen, Gerhart Hauptmann, the Expressionists, Brecht, and Duerrenmatt. All texts will be read in translation.

#### COMPARATIVE LITERATURE 104. FRESHMAN SEMINAR IN GERMAN LITERATURE (II)

Spring term. Comparative Literature 104 may be taken independently of Comparative Literature 103. Mr. Connor and Mr. Muschg.

Modern German prose writings. The reading list will consist of works by Thomas Mann, Franz Kafka, Günter Grass and others. All texts will be read in translation.

### Government

#### GOVERNMENT 101S. AMERICAN GOVERNMENT

Spring term. Mr. Lewis.

A general introduction to American national government and politics.

#### GOVERNMENT 104S. COMPARATIVE GOVERNMENT

Fall term. Mr. Mozingo.

A comparative study of major contemporary political movements and governmental institutions and processes. Great Britain, France, Germany, Russia, as well as some of the newly emerging countries will provide the materials for the discussion of key issues.

### History

#### HISTORY 215-216. AMERICAN HISTORY

Throughout the year but either term may be taken separately. Messrs. Kammen, Kirkland, Polenberg, Silbey, and Staff.

Two major topics are considered each term and use will be made of different modes of historical inquiry: political, constitutional, diplomatic, economic, social, and intellectual. A primary purpose will be to give the student opportunities to make his own historical judgments and analyze those made by others. These aims will be pursued largely through weekly seminar work and frequent short essays.

## History of Art

### HISTORY OF ART 103. ANALYSIS OF WORKS OF ART

Either term. Mr. O'Connor (Director, fall term), Mrs. Benson (Director, spring term), Mrs. Dotson, Messrs. Brown, Calkins, Lipke, and Assistants.

An introduction to the problems of experiencing works of art. Students will meet in small groups for discussion and examination of works of art, largely through reproductions but with occasional museum study, in order to provide training in the techniques of visual analysis. A number of short papers will be assigned throughout the term, but emphasis will be placed on classroom participation and on articulation of the visual experience.

## Philosophy

### PHILOSOPHY 100. FRESHMAN SEMINAR IN PHILOSOPHY

Either term. Fall term: Messrs. Canfield, Kretzmann, Pike, and Sachs. Spring term: Messrs. Lyons, Sorabji, and Stocker.

## Romance Studies

(See French, page 25, and Spanish below)

## Spanish

### SPANISH 205. THE MODERN SPANISH NOVEL

Fall term. Qualification in Spanish required. (For definition of Qualification see page 12.) Mr. Kronik.

Reading and informal discussion of Spanish fiction from the early twentieth century to the present. Classroom discussion and written work to deal with problems of style, structure, characterization, etc. Readings in Spanish and English; discussion and papers in English.

### SPANISH 206. THE MODERN SPANISH DRAMA

Spring term. Qualification in Spanish required. (For definition of Qualification see page 12.) Mr. Kronik.

Spanish drama of the twentieth-century from Benavente and García Lorca to the contemporary writers, Buero Vallejo and Sastre. Informal classroom discussion and written work will center on problems of dramatic technique. Readings in Spanish; discussion and papers in English.

## Theatre Arts

### THEATRE ARTS 125. THE PUBLIC ARTS

Spring term. Mr. Beck.

A consideration of the principal theatre-related arts—film, radio, television, and contemporary mixed media; their origins, their history, their methods of communication, their position in contemporary society. The course will stress development of writing skills. Reports, as well as a final research project, will be required.

## AMERICAN STUDIES

Mr. D. B. Davis, Chairman; Messrs. S. M. Brown, Jr., D. F. Dowd, R. H. Elias, A. Hacker, C. Rossiter, S. C. Strout, R. M. Williams, Jr.

The American Studies Committee does not offer a formal major, but seeks to encourage interdisciplinary work in the history, culture, and institutions of America. The student can find in the departments of history, philosophy, economics, English, government, and sociology, which are represented by members of the Committee, a variety of such courses dealing with American subjects. American Studies 401-402 is designed for students whose background and achievement qualify them to go beyond the limits of their major discipline in an advanced, interdisciplinary exploration of the history and meaning of American culture.

### 401-402. SEMINAR IN AMERICAN STUDIES

Throughout the year. Credit four hours a term. Prerequisites: senior standing; a cumulative average of B in courses in the humanities, history, and the social sciences; and consent of the instructor. Application should be made to Mr. Elias before the beginning of each preregistration period. Fall term: W 1:25-3:20, Mr. Davis. Spring term: Th 1:25-3:20, Mr. Elias.

An advanced course intended to raise central questions concerning the methods and assumptions of the various disciplines and the relation of these disciplines to each other. Fall term: changing concepts of the American character—a study of images and interpretations of the American character from the early nineteenth century to the present, through an analysis of selected fiction and of commentaries by Tocqueville and modern social scientists. Spring term: the 1920's; the status of the individual as seen in the decade's economy, politics, family relations, justice, literature, fine arts, and philosophy; readings in Veblen, Hoover, J. B. Watson, Hemingway, and Dewey, among others.

## ANTHROPOLOGY

Mr. R. J. Smith, Chairman; Messrs. R. Ascher, F. A. Cancian, W. L. Chafe, E. D. Chapple, C. F. Hockett, K. A. R. Kennedy, B. Lambert, W. W. Lambert, T. F. Lynch, E. M. Mendelson, M. E. Opler, J. M. Roberts, L. Sharp, J. T. Siegel, Miss Judith Treistman, Messrs. T. S. Turner, V. W. Turner, A. P. Wolf, F. W. Young.

Two majors are offered by the Department: (1) a major in anthropology, and (2) a major in social relations.

**ANTHROPOLOGY.** For admission to the major in anthropology a student should have taken Anthropology 101 and 102 and is required to take thirty-two additional hours in anthropology, chosen from among courses at the 300 level or higher. Of these thirty-two hours, at least eight hours must be taken at the 400 level or higher.

The student's developing interests may lead him to concentrate in the humanistic, social, or natural science aspects of anthropology,

which, as a broad field, includes the subdivisions of archaeology, social anthropology, linguistics, psychological anthropology, and physical anthropology or human biology. The student majoring in anthropology may combine work in any of these subdivisions of the subject which meet his special interests, or he may work broadly in the field to gain a rounded view of the study of man. The specific program of courses in the major and related subjects is designed by the individual student in consultation with his major adviser.

Students seeking admission to the Department's Honors program should file application on a form obtainable in the departmental office not later than February 15 of their junior year. Final selection will be made by the Anthropology faculty. Honors students may fulfill part or all of their 400-level requirements by taking Anthropology 491 and 492.

Specialized instruction is offered in Anthropology 497-498 (Topics in Anthropology). Such study is open to a strictly limited number of juniors and seniors. Consent of the instructor is required.

The Distribution requirement in Social Sciences is met in Anthropology 101 and 102, or 101 or 102 and either 201 or 202.

**SOCIAL RELATIONS.** The major in social relations is offered jointly by the Department of Anthropology and the Department of Sociology. The major provides the student with basic competence in cultural anthropology, social psychology, and sociology, while giving particular emphasis to the common methods of research in these disciplines. The student electing this major is expected to obtain a grasp of the common interests and evidence of these disciplines as well as knowledge of their unique insights in attempting to develop generalizations regarding man in society. The student's work is integrated in his senior year when he takes the Social Relations Seminar in which he is expected to interrelate aspects of the theory and data of the three disciplines.

1. Prerequisites to the major: The candidate must apply to the Committee on Admission to the Social Relations Major, offering the following:

- a. Either Anthropology 101 or Sociology 101.
- b. Either Psychology 101 or Child Development 115 or Sociology 281.
- c. Industrial and Labor Relations 210 or equivalent.

2. The major. The major calls for a minimum of 36 hours of course work as follows:

a. Three pairs or other combinations of related courses at the 300 level or above, to be selected in consultation with the major adviser. These six courses must include two from each of the following disciplines: anthropology, social psychology, sociology.

b. At least one course in methods, to be selected from the following: anthropological methods, techniques of experimentation (psychology), methods in sociology, advanced psychological statistics, the philosophy of science or of social science, advanced statistics (such as Industrial and Labor Relations 311).

c. At least one course in theory which is related to social relations.

d. The senior seminar in social relations (Sociology 497 or Anthropology 495).

A list of the courses which may be used to satisfy the requirements for the major in social relations is available from any of the major advisers.

Students seeking admission to the program in social relations should apply to the chairman of the Social Relations Committee, Robin M. Williams, Jr.

## Introductory and General Courses

### 101. INTRODUCTION TO CULTURAL ANTHROPOLOGY

Either term. Credit three hours a term. Open only to freshmen and sophomores. Fall term: T Th 11:15, discussion sections to be arranged. Mr. B. Lambert. Spring term: T Th 10:10, discussion sections to be arranged. Mr. Smith.

A comparative study of the organization of cultural behavior in systems of communications, technology, social relations, ritual, ideas, and sentiments; the relation of such systems to personal behavior and to continuity, change, and cultural transfer in history. Illustrative materials drawn largely from non-Western societies.

### 102. THE EVOLUTION OF MAN

Either term. Credit three hours a term. Open only to freshmen and sophomores. Anthropology 101 is not prerequisite to Anthropology 102. Fall term: T Th 10:10, discussion sections to be arranged. Miss Treistman. Spring term: T Th 11:15, discussion sections to be arranged. Mr. Ascher.

An exploration of the archaeological and fossil record of human evolution; emphasis is on the varied ways of uncovering, interpreting, and understanding man's biological and cultural development from the origin of man to the rise of civilization.

### 201-202. SEMINAR: PROBLEMS IN ANTHROPOLOGY

Throughout the year or either term. Credit three hours a term. Open only to selected freshmen or sophomores who have had Anthropology 101 or 102 or both, and the special permission of the instructor. T 1:25-3:20. Messrs. Cancian, Lynch, and Siegel, and Miss Treistman.

A seminar designed to permit intensive development of selected topics and problems raised in Anthropology 101-102. Students will be required to prepare research papers and lead discussions.

### 301. SOCIAL ANTHROPOLOGY

Fall term. Credit four hours. Open to all sophomores, juniors, and seniors who have not had Anthropology 101. M W F 12:20.

A study and comparison of the types of learned, shared, and transmitted behavior patterns and ideas by means of which men of various periods and places have dealt with their environment, worked out their social relations with their fellow men, and defined their place in the cosmos. An inquiry into human nature and its expression in man's institutional and intellectual creations.



**302. LANGUAGE AND CULTURE**

Spring term. Credit four hours. Open to all sophomores, juniors and seniors without prerequisite. M W F 10:10.

A survey of the field of linguistics as a branch of anthropology.

**303. PREHISTORIC ARCHAEOLOGY**

Fall term. Credit four hours. Open to all sophomores, juniors and seniors without prerequisite. M W F 11:15. Mr. Lynch.

A study of Old World prehistory from the origins of culture in the Paleolithic through the beginnings of civilization. Stress will be given to the interrelations between culture and environment in the Pleistocene; the origins and diffusion of agriculture, sedentism, and civilization; and the prehistoric background of European culture and society.

**304. PHYSICAL ANTHROPOLOGY**

Spring term. Credit four hours. Open to all sophomores, juniors, and seniors without prerequisite. M W F 11:15. Mr. Kennedy.

A survey of modern theories of man's biological history. The evidence for primate evolution in the data of the fossil record, comparative anatomy, biochemical anthropology, and animal behavior studies. Particular attention is given to taxonomy, phylogeny, protocultural development, and on-going human evolution.

**305. PSYCHOLOGICAL ANTHROPOLOGY**

Fall term. Credit four hours. Open to all sophomores, juniors, and seniors without prerequisite. T Th S 9:05. Messrs. W. W. Lambert and Roberts.

A detailed consideration of problems selected to illustrate the mutual relevance of psychology and social anthropology.

**312. CONTEMPORARY ANTHROPOLOGICAL THEORY AND METHOD**

Spring term. Credit four hours. M W F 2:30. Mr. Opler.

A survey of the principal approaches employed by present-day anthropologists as they seek to understand human society and culture. Applications of social and psychological theory to anthropological problems will be considered.

**[313. CULTURAL CHANGE]**

Not offered in 1967-68.

Fall term. Credit four hours. M W F 11:15.

**314. APPLIED ANTHROPOLOGY**

Spring term. Credit four hours. M W F 10:10. Mr. Opler.

The uses of anthropology in the modern world. Designed not only for students of the humanities and social sciences, but also for natural scientists concerned with the cultural problems involved in technological change, cultural transfer, community development, native administration, and modernization in various regions of the world.

**[315. ANTHROPOLOGY AND HISTORY]**

Not offered in 1967-68.

Fall term. Credit four hours. T Th S 10:10. Mr. Smith.

**[320. ART AND CULTURE]**

Not offered in 1967-68.

Spring term. Credit four hours. M W F 2:30. Mr. Smith.

321. KINSHIP AND SOCIAL ORGANIZATION

Fall term. Credit four hours. M W F 10:10. Mr. T. Turner.

The development of kinship studies, analysis of the family, unilineal and bilateral systems of kinship, marriage. The study of kinship terminology. Kinship in small-scale and complex societies. Political, economic, and religious aspects of kinship organization.

323. COMPARATIVE RELIGIOUS SYSTEMS

Fall term. Credit four hours. M W F 2:30-4:25. Mr. Siegel.

A study of religious thought and behavior emphasizing the beliefs of non-literate and non-Western peoples.

324. MYTH, RITUAL, AND SYMBOL

Spring term. Credit four hours. M W F 1:25. Mr. T. Turner.

A survey of various approaches to the understanding of myth, cosmology, ritual, and esthetic symbolism, drawing upon anthropological, psychological, and philosophical sources. The ideas of certain literary critics and historians of religion will also be considered. An attempt will be made to isolate the basic formal principles of symbolic structures, to analyze the nature and sources of the affective and cognitive aspects of symbolic meaning and to define the social and cultural functions of the major categories of symbolism.

326. ECONOMIC ANTHROPOLOGY

Spring term. Credit four hours. M W F 11:15. Mr. Cancian.

Data on economic systems of primitive and peasant societies and problems in the conceptualization of these data will be reviewed in terms of the "substantive," "formal," and "adaptive" approaches to economic anthropology. Attention will be given to economic change.

[328. COMPARATIVE POLITICAL AND LEGAL ORGANIZATION]

Not offered in 1967-68.

Spring term. Credit four hours. M W F 11:15. Mr. Roberts.

[363. ARCHAEOLOGY OF ASIA]

Not offered in 1967-68.

Fall term. Credit four hours. T Th S 10:10. Miss Treistman.

364. ARCHAEOLOGY OF THE AMERICAS

Spring term. Credit four hours. T Th 9:05 and a discussion section to be arranged. Mr. Lynch.

A study of the prehistoric cultures of the New World. Major topics will include the entry of man; early adaptations to the environment; the American Southwest; the origins of American agriculture; the rise of temple centers, cults, and great art styles; the formation of states in Mexico and Peru; and possibilities of long distance trade and sea travel.

372. LIVING RACES OF MAN

Spring term. Credit four hours. M W F 9:05. Mr. Kennedy.

A survey of the major features of phenotypic variation in human populations today. Attention is directed to the evolutionary factors of race formation operating through time and across geographical lines, to the histories of particular human groups, and to the development of concepts about race in Western thought.

## Courses for Upperclassmen and Graduates

### [415-416. SURVEY OF ANTHROPOLOGY THEORY]

Not offered in 1967-68.

Throughout the year. May be taken either term or both terms. Credit four hours a term. M W F. Mr. Opler.

### COMPARATIVE RURAL SOCIETIES

(Rural Sociology 420, Agr.)

Fall term. Credit three hours. Prerequisite, a course in general sociology or anthropology. M W F 11:15. Mr. Young.

### 423. COMPARATIVE SOCIAL SYSTEMS

Fall term. Credit four hours. M W F 2:30.

Topics will include the comparative study of systems of kinship, politics, religion, and magic in preliterate societies and the relationship between these types of systems in particular societies. Also age and sex differentiation; age-sets and age-grades; division of labor, types of specialization, occupational associations; rank and occupation; social classes, caste, slavery, pawnship, and serfdom; secret associations; social networks and social mobility. References will also be made to theories concerning them.

### [424. FOLKLORE AND CULTURE]

Not offered in 1967-68.

Spring term. Credit four hours. M W F 3:35. Mr. V. Turner.

### [426. THE CONTENT OF CULTURE]

Not offered in 1967-68.

Spring term. Credit four hours. Hours to be arranged. Mr. Roberts.

### [427. CONSTANTS AND VARIABLES IN CULTURE]

Not offered in 1967-68.

Fall term. Credit four hours. M W F 2:30. Mr. Roberts.

### 430. ETHNOLOGY OF NORTH AMERICA

Spring term. Credit four hours. Prerequisite, Anthropology 101 or 301, or consent of the instructor. M W F 3:35. Mr. Roberts.

A general survey of the ethnography of North America, with emphasis on problems and topics to which the North American materials are most relevant. Selected cultures will be considered in some detail.

### [432. ETHNOLOGY OF MIDDLE AND SOUTH AMERICA]

Not offered in 1967-68.

Spring term. Credit four hours. M W F 9:05. Mr. T. Turner.

### 434. ETHNOLOGY OF MAINLAND SOUTHEAST ASIA

Spring term. Credit four hours. M W F 9:05. Mr. Mendelson.

The development and distribution of major cultural systems in mainland Southeast Asia. Discussion of selected groups in southern China, Assam, Burma, Thailand, Laos, Cambodia, and Vietnam, and of the fate of traditional cultural characteristics following the expansion of Chinese, Indian, Moslem, and Western civilizations into these areas.

### 435. ETHNOLOGY OF ISLAND SOUTHEAST ASIA

Fall term. Credit four hours. M W F 1:25. Mr. Siegel.

A survey of cultures of Indonesia, Malaysia, and the Philippines with attention focused on social organization, rituals, beliefs, and forms of cultural expression. Selected societies will be studied in some detail.

[436. ETHNOLOGY OF AFRICA]

Not offered in 1967-68.

Spring term. Credit four hours. M W F 2:30. Mr. V. Turner.

A social and cultural survey of representative African peoples. Stress is laid on the comparative study of political institutions and local descent groups. Ritual beliefs and practices are considered in relation to repetitive and radical change.

438. ETHNOLOGY OF OCEANIA

Spring term. Credit four hours. M W F 12:20. Mr. B. Lambert.

A survey of native cultures of Polynesia, Micronesia, Melanesia, and Australia, with emphasis on topics of general interest to social anthropologists. The settlement and prehistory of the area will also be discussed.

[441. CULTURE AND SOCIETY IN SOUTH ASIA]

Not offered in 1967-68.

Fall term. Credit four hours. M W F 10:10. Mr. Opler.

[443. CHINESE CULTURE AND SOCIETY]

Not offered in 1967-68.

Fall term. Credit four hours. M W F 3:35. Mr. Wolf

[445. JAPANESE CULTURE AND SOCIETY]

Not offered in 1967-68.

Fall term. Credit four hours. M W F 9:05. Mr. Smith.

451. INTERPRETIVE ARCHAEOLOGY

Fall term. Credit four hours. Th 1:25-3:20. Mr. Ascher.

A discussion of the dual humanistic, scientific aims of archaeology and how they may be achieved. The nature of recognition, observation classification, experiment, quantification, and analogy in archaeological inference. Critical evaluation of attempts to reconstruct events, systems of knowledge, personalities, economies, and societies. Examples are drawn from archaeology in contemporary as well as ancient communities. Laboratory and field work arranged where appropriate for individual projects.

452. SCIENCE IN ARCHAEOLOGY

Spring term. Credit four hours. Th 1:25-3:20. Mr. Ascher.

A multidisciplinary seminar focused on applications to archaeology of some aspects of science. Topics vary with the composition of the class, but they can include applications drawn from the biological, physical, geological, material, or computer sciences; mathematics, statistics, and engineering. Attention is given to archaeological thought and to accomplishments in science and technology (e.g., Stonehenge) of peoples known from archaeological data. Class readings include examples of applications (e.g., radiocarbon dating) and collaborative approaches to classic problems (e.g., emergence of food-producing communities). Laboratory and field work on the design and construction of experimental archaeological sites.

466. TECHNOLOGY

Spring term. Credit four hours. M W F 1:25. Miss Treistman.

A topical study of primitive arts and industries; the history of techniques and the history of technological studies. Examples will be ethnological and archaeological.

#### 471. PHYSICAL ANTHROPOLOGY LABORATORY

Fall term. Credit four hours. Prerequisite, Anthropology 102, 202, 304, or 372; or Biological Sciences 101-102, 103-104, 210, 270, 280, 301, 311, 361, or 362; or consent of the instructor. Th S 10:10-12:05. Mr. Kennedy.

Methodology of field and laboratory analysis of human biological variation. Practical exercises in the techniques of human biometrics, serology, comparative primate anatomy, growth and development studies, and interpretation of the hominid fossil record.

#### 491. HONORS SEMINAR

Fall term. Credit four hours. Hours to be arranged. Mr. B. Lambert.

#### 492. HONORS THESIS

Spring term. Credit four hours. Prerequisite, Anthropology 491. Hours to be arranged. Mr. B. Lambert.

#### 495. SOCIAL RELATIONS SEMINAR

(Also Sociology 497)

Fall term. Credit four hours. Open only to seniors majoring in social relations. Hours to be arranged.

#### 497. TOPICS IN ANTHROPOLOGY

Either term. Credit two hours. Prerequisite, consent of the instructor. Hours to be arranged. Staff.

#### 498. TOPICS IN ANTHROPOLOGY

Either term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Staff.

## Graduate Seminars

#### [501. PROSEMINAR: THE SCOPE OF ANTHROPOLOGY]

Not offered in 1967-68.

Fall term. Credit four hours. Hours to be arranged. Mr. Sharp and staff.

#### [502. SEMINAR: FIELD RESEARCH]

Not offered in 1967-68.

Spring term. Credit four hours. Hours to be arranged. Mr. V. Turner and staff.

#### 507-508. SPECIAL PROBLEMS IN ANTHROPOLOGY

Throughout the year. Credit and hours to be arranged. Staff.

#### CROSS-CULTURAL RESEARCH METHODS

(Rural Sociology 516) (Agr. or Grad. School)

Spring term. Credit three hours. Prerequisite, Rural Sociology 515 (Agr.) or permission of the instructor. W F 1:25-3:00. Mr. Young.

#### 520. CONTEMPORARY BRITISH AND FRENCH ANTHROPOLOGY

Spring term. Credit four hours. T 3:35-5:35. Mr. B. Lambert.

## 36 ANTHROPOLOGY

A survey and critique of major current trends in British and French anthropology. Special attention is paid to the work of such representative figures as Levi-Strauss, Leach, Fortes, Firth, and Gluckman and the types of research they have fostered.

### 521. ETHNOLINGUISTICS

Fall term. Credit four hours. F 3:35-5:35. Instructor to be announced.

A survey of problems and findings in the interrelations of language and culture.

### 524. RELIGIOUS SYSTEMS: BUDDHISM

Spring term. Credit four hours. F 3:35-5:35. Mr. Mendelson.

A comparative study of this world religion in the context of Asian civilizations with emphasis on Theravada Buddhism.

### 525. THE CONTENT OF CULTURE

Fall term. Credit four hours. T 3:35-5:35. Mr. Roberts.

Attention is given to the description and management of the informational resource known as culture with a view to developing a theory of culture content. Codes, models, and inventories are given specific attention.

### 531. MIDDLE AMERICA

Fall term. Credit four hours. Th 3:35-5:35. Mr. Cancian.

Topics in the social anthropology of Middle American Indians and peasants. This year the focus will be on economic systems.

### 532. TRIBAL PEOPLES OF LOWLAND SOUTH AMERICA

Spring term. Credit four hours. M 3:35-5:35. Mr. T. Turner.

An analytical study of selected well-documented tribal societies from Tierra del Fuego to the Amazon basin and Andean Montana. Ecology, social structure, political organization, ritual, and mythology will be considered.

### 534-535. SOUTHEAST ASIA: READINGS IN SPECIAL PROBLEMS

Throughout the year. Credit and hours to be arranged. Prerequisite, consent of the instructors. Messrs. Mendelson and Siegel.

### [537. AFRICA]

Not offered in 1967-68.

Fall term. Credit four hours. Mr. V. Turner.

### 541. SEMINAR: INDIA AND SOUTH ASIA

Fall term. Credit four hours. M 3:35-5:35. Mr. Opler.

An analysis of selected social, economic, and ideological institutions and developments in India and South Asia, and of present tendencies in regard to them.

### [542. CHINA]

Not offered in 1967-68.

Spring term. Credit four hours. Mr. Wolf.

### 543. JAPANESE CULTURE AND SOCIETY

Fall term. Credit four hours. W 3:35-5:35. Mr. Smith.

A survey of the social structure of Japan and a discussion of trends in urban and rural life during the past century. Attention will also be devoted

to the historical development and present social context of the graphic arts, literature, music, and the drama.

**561. PROBLEMS IN ASIAN ARCHAEOLOGY**

Fall term. Credit four hours. T 3:35-5:35. Miss Treistman.

An investigation of selected problems in Asian prehistory and early civilizations.

**564. PROBLEMS IN EUROPEAN ARCHAEOLOGY**

Spring term. Credit four hours. W 3:35-5:35. Mr. Lynch.

An investigation of selected problems in the interpretation of European prehistory, ranging from the significance of variation in Mousterian industries, to the archaeological identification of Iron Age cultural and linguistic groups.

**[565. ARCHAEOLOGY: AGRICULTURE AND CIVILIZATION]**

Not offered in 1967-68.

Fall term. Credit four hours. Mr. Lynch.

**[572. BIOCULTURAL EVOLUTION]**

Not offered in 1967-68.

Spring term. Credit four hours. Th 3:35-5:35. Mr. Ascher.

**575. PHYSICAL ANTHROPOLOGY: HISTORY AND THEORY**

Fall term. Credit four hours. Th 7:30-9:25 P.M. Mr. Kennedy.

The historical development of ideas about man's place in nature derived from philosophical and scientific sources. Discussion is based upon readings of original writings by Linnaeus, Blumenbach, Darwin, Boule, Keith, and contemporary anthropologists. Special emphasis is placed upon theories of human phylogeny, the methodology of physical anthropology, and current orientations of the discipline.

**[577. PALAEOANTHROPOLOGY OF SOUTH ASIA]**

Not offered in 1967-68.

Fall term. Credit four hours. Mr. Kennedy.

**601-602. FIELD RESEARCH**

Throughout the year. Credit to be arranged. Staff.

Field research seminars may be conducted in the United States, Latin America, Africa, India, Southeast Asia, Taiwan, Japan, and other areas for a limited number of adequately prepared students.

## ASIAN STUDIES

S. J. O'Connor, Acting Chairman; Messrs. L. P. Adams, E. Ahmed, B. R. O'G. Anderson, D. E. Ashford, K. Biggerstaff, N. C. Bodman, H. Capener, Nai-Ruenn Chen, A. T. Dotson, J. M. Echols, G. H. Fairbanks, H. Feldman, M. Freedman, J. W. Gair, F. H. Golay, A. B. Griswold, T. Harrison, M. Hugo-Brunt, R. B. Jones, Jr., G. McT. Kahin, G. B. Kelley, K. A. R. Kennedy, J. W. Lewis, T. C. Liu, J. McCoy, J. W. Mellor, M. Mendelson, D. Mazingo, M. E. Opler, C. A. Peterson, R. A. Polson, H. Shadick, L. Sharp, J. T. Siegel, M. Sill, R. J. Smith, Selosoe-

mardjan, Miss Judith Treistman, Messrs. A. P. Wolf, J. U. Wolff, O. W. Wolters, M. W. Young.

The applicant for admission to the major in Asian studies must have completed at least one course selected from among those listed under the Department of Asian Studies and must be recommended by the instructor in charge of that course. He must have received a minimum grade of C in this and in all other courses taken in the Department.

The candidate for the A.B. degree with a major in Asian studies is required to complete two courses at the 200 level in one of the Asian languages offered at Cornell. The major consists of at least thirty additional hours (which may include further language work), selected by the student in consultation with his adviser, from among the courses listed under the Department of Asian Studies numbered 300 and over. Majors normally concentrate in one of the following areas: China, Japan, South Asia, Southeast Asia.

The candidate for Honors must maintain a cumulative average of B in courses in the humanities and social sciences. He must also maintain an average of B in courses in the Department. In his senior year, the Honors candidate will take a two-term graduate seminar selected from among those listed below in consultation with his adviser, normally taking a seminar relating to the area in which his studies have been concentrated.

The Honors candidate will also take the Honors Course (Asian Studies 401) in which he writes his Honors paper. He may also enroll in Asian Studies 402 in his senior year, but this course is not required of him. At the end of his junior year, the student should consult with the professor with whom he plans to write his paper, to obtain permission to register for the Honors course. There will be a comprehensive written examination in May of his senior year, administered by the supervisor of his Honors work.

## Asia, General

### ECONOMICS OF AGRICULTURAL DEVELOPMENT

(Agricultural Economics 364) (Agr.)

Spring term. T Th S 9:05. Mr. Mellor.

### [SEMINAR ON THE ECONOMICS OF TROPICAL AGRICULTURE]

(Agricultural Economics 667) (Agr.)

Not offered in 1967-68.

Spring term. F 2:30-4:25. Mr. Poleman.

### [ARCHAEOLOGY OF ASIA]

(Anthropology 363)

Not offered in 1967-68.

Fall term. T Th S 10:10. Miss Treistman.

### RELIGIOUS SYSTEMS: BUDDHISM

(Anthropology 524)

Spring term. F 3:35-5:30. Mr. Mendelson.



**PROBLEMS IN ASIAN ARCHAEOLOGY**

(Anthropology 561)

Fall term. T 3:35-5:30. Miss Treistman.

**ARCHITECTURE AND PLANNING IN THE FAR EAST**

(Architecture 435)

Fall term. M W F 11:15. Mr. Hugo-Brunt.

**PUBLIC POLICY AND ECONOMIC DEVELOPMENT**

(Economics 371)

Fall term. M W F 9:05. Mr. Golay.

**ECONOMIC GROWTH AND DEVELOPMENT**

(Economics 571)

Fall term. Hours to be arranged. Mr. Golay and Mr. Morse.

**THE UNITED STATES AND ASIA**

(Government 377)

Fall term. M W F 2:30. Mr. Kahin.

**SEMINAR IN THE INTERNATIONAL RELATIONS OF ASIA**

(Government 577)

Fall term. Hours to be arranged. Mr. Kahin.

**INTRODUCTION TO ASIAN ART**

(History of Art 281)

Spring term. M W F 10:10. Mr. O'Connor.

**[ART OF INDIA AND SOUTHEAST ASIA]**

(History of Art 386)

Not offered in 1967-68.

Spring term. M W F 11:15. Mr. O'Connor.

**[PROBLEMS IN ASIAN ART]**

(History of Art 484)

Not offered in 1967-68.

Spring term. W 1:25-3:20. Mr. Young.

**401. ASIAN STUDIES HONORS COURSE**

Either term. Credit four hours a term. Staff.

This course, in which the student writes an Honors essay, is required of all Honors students in their senior year. It is normally taken with the student's major adviser.

**402. ASIAN STUDIES DIRECTED READING**

Either term. Credit two hours a term. Staff.

Open only to majors in the department in their senior year; provides the student with the opportunity to read intensively in a selected area under the direction of a member of the staff.

**591-592. SEMINAR: FIELD RESEARCH**

Throughout the year. Staff.

For description see the *Announcement of the Graduate School*.

## China

### AREA COURSES

#### [CHINESE CULTURE AND SOCIETY]

(Anthropology 443)

Not offered in 1967-68.

Fall term. M W F 3:35. Mr. Wolf.

#### [SEMINAR: CHINA]

(Anthropology 542)

Not offered in 1967-68.

Spring term. Mr. Wolf.

#### INTRODUCTION TO THE ECONOMY OF CHINA

(Economics 369)

Fall term. T Th S 9:05. Mr. Chen.

#### SEMINAR: THE ECONOMY OF CHINA

(Economics 676)

Spring term. Hours to be arranged. Mr. Chen.

#### CHINESE GOVERNMENT AND POLITICS

(Government 347)

Fall term. M W F 10:10. Mr. Lewis.

#### THE FOREIGN POLICY OF CHINA

(Government 478)

Spring term. T Th S 9:05. Mr. Mozingo.

#### [SEMINAR IN THE POLITICS OF CHINA]

(Government 547)

Not offered in 1967-68.

Spring term. Hours to be arranged. Mr. Lewis.

#### [SEMINAR IN THE FOREIGN POLICY OF CHINA]

(Government 583)

Not offered in 1967-68.

Fall term. Hours to be arranged.

#### HISTORY OF CHINESE CIVILIZATION PRIOR TO THE NINETEENTH CENTURY

(History 323)

Fall term. T Th S 10:10. Mr. Peterson.

#### HISTORY OF CHINESE CIVILIZATION: NINETEENTH AND TWENTIETH CENTURIES

(History 324)

Spring term. T Th S 10:10. Mr. Biggerstaff.

#### CHINESE HISTORY: T'ANG AND SUNG PERIODS

(History 492)

Spring term. T Th 2:30-4:25. Mr. Peterson.

**CHINESE HISTORIOGRAPHY**

(History 591)

Fall term. Hours to be arranged. Mr. Peterson.

**MODERNIZATION OF CHINA**

(History 593-594)

Throughout the year. M 3:35-5:30. Mr. Biggerstaff.

**SEMINAR IN MEDIEVAL CHINESE HISTORY**

(History 691-692)

One or two terms. Hours to be arranged. Mr. Peterson.

**SEMINAR IN MODERN CHINESE HISTORY**

(History 693-694)

One or two terms. Hours to be arranged. Mr. Biggerstaff.

**ART OF CHINA**

(History of Art 383)

Fall term. M W F 11:15. Mr. Young.

**STUDIES IN CHINESE PAINTING**

(History of Art 486)

Spring term. W 1:25-3:25. Mr. Young.

**HISTORY OF THE CHINESE LANGUAGE**

(Chinese 402)

Either term. Mr. Bodman.

**LINGUISTIC STRUCTURE OF CHINESE**

(Chinese 403)

Either term. Mr. Bodman.

**SINO-TIBETAN LINGUISTICS**

(Linguistics 581-582)

Throughout the year. Hours to be arranged. Mr. Bodman.

**[CHINESE HISTORICAL AND PHILOSOPHICAL LITERATURE IN TRANSLATION]**

(Comparative Literature 371)

Not offered in 1967-68.

Fall term. M W F 10:10. Mr. Shadick.

**CHINESE IMAGINATIVE LITERATURE IN TRANSLATION**

(Comparative Literature 372)

Spring term. M W F 10:10. Mr. Shadick.

Other courses dealing extensively with China are Anthropology 363, 561; Economics 365, 371; Government 377, 577; History of Art 281, 484; Architecture 435, and Planning 705 (Arch.).

**LANGUAGE COURSES****ELEMENTARY CHINESE**

(Chinese 101-102)

42 ASIAN STUDIES

INTERMEDIATE CHINESE I

(Chinese 201-202)

INTRODUCTION TO CLASSICAL CHINESE

(Chinese 213)

ELEMENTARY HOKKIEN CHINESE

(Chinese 221-222 — HOKKIEN)

ELEMENTARY CANTONESE

(Chinese 221-222 — CANTONESE)

INTERMEDIATE CHINESE II

(Chinese 301-302)

INTERMEDIATE CLASSICAL CHINESE

(Chinese 312)

CHINESE HISTORICAL AND PHILOSOPHICAL TEXTS

(Chinese 313)

ADVANCED READINGS IN MODERN CHINESE

(Chinese 411-412)

CLASSICAL CHINESE PROSE

(Chinese 414)

CLASSICAL CHINESE POETRY AND DRAMA

(Chinese 416)

READINGS IN THE TRADITIONAL CHINESE NOVEL

(Chinese 420)

ADVANCED READINGS IN CLASSICAL CHINESE

(Chinese 521-522)

SEMINAR IN CHINESE LITERATURE

(Chinese 571-572)

SINO-TIBETAN LINGUISTICS

(Linguistics 581-582)

## Japan

### AREA COURSES

[JAPANESE CULTURE AND SOCIETY]

(Anthropology 445)

Not offered in 1967-68.

Fall term. M W F 9:05. Mr. Smith.

JAPANESE CULTURE AND SOCIETY

(Anthropology 543)

Fall term. W 3:35-5:35. Mr. Smith.

# ART OF JAPAN

(History of Art 384)

Spring term. M W F 11:15. Mr. Young.

Other courses dealing extensively with Japan are Anthropology 363; Government 377; History of Art 281; Planning 705 (Arch.).

## LANGUAGE COURSES

### ELEMENTARY JAPANESE

(Japanese 101-102)

### JAPANESE READING

(Japanese 201-202)

### JAPANESE COMPOSITION AND CONVERSATION

(Japanese 203-204)

### SELECTED READINGS IN JAPANESE

(Japanese 301-302)

### INTRODUCTION TO CLASSICAL JAPANESE

(Japanese 305-306)

### JAPANESE READINGS FOR STUDENTS OF CHINESE

(Japanese 401-402)

## South Asia

### AREA COURSES

#### [CULTURE AND SOCIETY IN SOUTH ASIA]

(Anthropology 441)

Not offered in 1967-68.

Fall term. M W F 10:10. Mr. Opler.

#### SEMINAR: INDIA AND SOUTH ASIA

(Anthropology 541)

Fall term. M 3:35-5:35. Mr. Opler.

#### [PALAEOANTHROPOLOGY OF SOUTH ASIA]

(Anthropology 577)

Not offered in 1967-68.

Fall term. Mr. Kennedy.

#### [SEMINAR: THE AGRICULTURAL DEVELOPMENT OF SOUTH ASIA]

(Agricultural Economics 664) (Agr.)

Not offered in 1967-68.

Spring term. Hours to be arranged. Mr. Mellor.

#### [HISTORY OF HINDI]

(Hindi 401)

Not offered in 1967-68.

Fall term in alternate years. Hours to be arranged. Mr. Fairbanks.

**SEMINAR IN HINDI LINGUISTICS**

(Hindi 600)

Either term. Hours to be arranged. Mr. Fairbanks, Mr. Gair, or Mr. Kelley.

**INDIA AS A LINGUISTIC AREA**

(Linguistics 331)

Fall term in alternate years. Hours to be arranged. Mr. Fairbanks, Mr. Gair, or Mr. Kelley.

**INDO-ARYAN STRUCTURES**

(Linguistics 432)

Spring term in alternate years. Hours to be arranged.

**[COMPARATIVE INDO-EUROPEAN LINGUISTICS]**

(Linguistics 521-522)

Not offered in 1967-68.

Throughout the year in alternate years. Hours to be arranged. Mr. Fairbanks.

**[ELEMENTARY PALI]**

(Linguistics 530)

Not offered in 1967-68.

Either term as needed. Hours to be arranged. Mr. Fairbanks.

**ELEMENTARY SANSKRIT**

(Linguistics 531-532)

Throughout the year in alternate years. Hours to be arranged. Mr. Fairbanks.

**[COMPARATIVE INDO-ARYAN LINGUISTICS]**

(Linguistics 534)

Not offered in 1967-68.

Spring term in alternate years. Hours to be arranged. Mr. Fairbanks.

**SEMINAR: SOUTH ASIAN LINGUISTICS**

(Linguistics 600)

Either term. Hours to be arranged.

**DRAVIDIAN STRUCTURES**

(Linguistics 436)

Spring term in alternate years. Hours to be arranged. Mr. Kelley.

**[COMPARATIVE DRAVIDIAN]**

(Linguistics 536)

Not offered in 1967-68.

Spring term in alternate years. Hours to be arranged. Mr. Kelley.

Other courses dealing extensively with South Asia are Anthropology 363, 524, 561; Economics 365, 371; Government 338, 377, 577; History of Art 281, 386, 484; Agricultural Economics 364, 667, and Rural Sociology 528 (Agr.).

**LANGUAGE COURSES**

**ELEMENTARY HINDI**

(Hindi 101-102)

**HINDI READING**

(Hindi 201-202)

**HINDI COMPOSITION AND CONVERSATION**

(Hindi 203-204)

**READINGS IN HINDI LITERATURE**

(Hindi 301-302)

**ADVANCED HINDI COMPOSITION AND CONVERSATION**

(Hindi 303-304)

**ADVANCED HINDI READING**

(Hindi 305-306)

**ELEMENTARY SINHALESE**

(Sinhalese 101-102)

**ELEMENTARY TELUGU**

(Telugu 101-102)

**ELEMENTARY URDU**

(Urdu 101-102)

## Southeast Asia

### AREA COURSES

**COMPARATIVE RELIGIOUS SYSTEMS**

(Anthropology 323)

Fall term. M W F 2:30-4:25. Mr. Siegel.

**ETHNOLOGY OF MAINLAND SOUTHEAST ASIA**

(Anthropology 434)

Spring term. M W F 9:05. Mr. Mendelson.

**ETHNOLOGY OF ISLAND SOUTHEAST ASIA**

(Anthropology 435)

Fall term. M W F 1:25. Mr. Siegel.

**SOUTHEAST ASIA: READINGS IN SPECIAL PROBLEMS**

(Anthropology 534-535)

Throughout the year. Hours to be arranged. Messrs. Mendelson and Siegel.

**SEMINAR: ECONOMIC GROWTH IN SOUTHEAST ASIA**

(Economics 678)

Spring term. Hours to be arranged. Mr. Golay.

**GOVERNMENTS AND POLITICS OF SOUTHEAST ASIA**

(Government 344)

Fall term. T Th S 9:05. Mr. Anderson.

SEMINAR IN POLITICAL PROBLEMS OF SOUTHEAST ASIA  
(Government 644)

Spring term. Hours to be arranged. Mr. Kahin.

SOUTHEAST ASIAN HISTORY TO THE FOURTEENTH CENTURY  
(History 495)

Fall term. T Th S 11:15. Mr. Wolters.

SOUTHEAST ASIAN HISTORY FROM THE FIFTEENTH CENTURY  
(History 496)

Spring term. T Th S 11:15. Mr. Wolters.

SEMINAR IN SOUTHEAST ASIAN HISTORY  
(History 695-696)

One or two terms. Hours to be arranged. Mr. Wolters.

SOUTHEAST ASIAN ART AND ARCHAEOLOGY  
(History of Art 488)

Fall term. W 1:25-3:25. Mr. O'Connor.

SEMINAR: SOUTHEAST ASIAN LINGUISTICS  
(Linguistics 571-572)

Throughout the year. Hours to be arranged. Mr. Jones.

SEMINAR: MALAYO-POLYNESIAN LINGUISTICS  
(Linguistics 573-574)

Throughout the year. Hours to be arranged. Mr. Wolff.

[SOUTHEAST ASIAN LITERATURE IN TRANSLATION]  
(Comparative Literature 380)

Not offered in 1967-68.

Fall term. T 2:30-4:25. Mr. Echols.

501-502. SOUTHEAST ASIA

Throughout the year. Credit 4 hours. F 3:35-5:30, or to be arranged.

Fall term (MALAYSIA), Mr. Harrisson. Spring term (INDONESIA), Mr. Seloemardjan.

For full description see the *Announcement of the Graduate School*.

676. SOUTHEAST ASIAN RESEARCH TRAINING SEMINAR

Spring term. Credit to be arranged. Hours to be arranged. Open only to advanced graduate students preparing for fieldwork in Southeast Asia. Mr. Seloemardjan.

Other courses dealing extensively with Southeast Asia are Economics 371, 571; Government 377, 577; History of Art 281, 386, 484; Architecture 435 and Planning 705, 707 (Arch.); Rural Sociology 528 and Agricultural Economics 668 (Agr.).

## LANGUAGE COURSES

ELEMENTARY BURMESE  
(Burmese 101-102)



**BURMESE READING**

(Burmese 201-202)

**BURMESE COMPOSITION AND CONVERSATION**

(Burmese 203-204)

**ADVANCED BURMESE READING**

(Burmese 301-302)

**ELEMENTARY CEBUANO (BISAYAN)**

(Cebuano 101-102)

**ELEMENTARY INDONESIAN**

(Indonesian 101-102)

**INDONESIAN READING**

(Indonesian 201-202)

**INDONESIAN COMPOSITION AND CONVERSATION**

(Indonesian 203-204)

**[READINGS IN INDONESIAN AND MALAY]**

(Indonesian 301-302)

Not offered in 1967-68.

**[ADVANCED INDONESIAN CONVERSATION AND COMPOSITION]**

(Indonesian 303)

Not offered in 1967-68.

**[ADVANCED READINGS IN INDONESIAN AND MALAY LITERATURE]**

(Indonesian 305)

Not offered in 1967-68.

**[LINGUISTIC STRUCTURE OF INDONESIAN]**

(Indonesian 403)

Not offered in 1967-68.

**MALAYO-POLYNESIAN LINGUISTICS**

(Linguistics 573-574)

**ELEMENTARY JAVANESE**

(Javanese 221-222)

**[INTERMEDIATE JAVANESE]**

(Javanese 223-224)

Not offered in 1967-68.

**[OLD JAVANESE]**

(Linguistics 537-538)

Not offered in 1967-68.

**ELEMENTARY TAGALOG**

(Tagalog 101-102)

## 48 ASTRONOMY

### LINGUISTIC STRUCTURE OF TAGALOG

(Tagalog 403)

### ELEMENTARY TELUGU

(Telugu 101-102)

### TELUGU READING

(Telugu 201-202)

### ELEMENTARY THAI

(Thai 101-102)

### THAI READING

(Thai 201-202)

### THAI COMPOSITION AND CONVERSATION

(Thai 203-204)

### ADVANCED THAI

(Thai 301-302)

### THAI LITERATURE

(Thai 305-306)

### ELEMENTARY URDU

(Urdu 101-102)

### ELEMENTARY VIETNAMESE

(Vietnamese 101-102)

### VIETNAMESE READING

(Vietnamese 201-202)

### VIETNAMESE COMPOSITION AND CONVERSATION

(Vietnamese 203-204)

### ADVANCED VIETNAMESE

(Vietnamese 301-302)

### VIETNAMESE LITERATURE

(Vietnamese 305-306)

## ASTRONOMY

Mr. T. Gold, Chairman; Messrs. W. I. Axford, F. D. Drake, M. O. Harwit, C. Hazard, D. O. Muhleman, E. E. Salpeter, R. W. Shaw.

Students who anticipate a major in astronomy should complete Astronomy 201-202 and the calculus not later than the sophomore year; they should consult the chairman as soon as possible. Graduate students must register with the instructor in charge of the desired course on regular registration days at the beginning of each term.

The Distribution requirement in physical sciences is met in Astronomy 201-202.

### 201. INTRODUCTION TO ASTRONOMY

Fall term. Credit four hours. Lectures, M W F 9:05. Laboratory, M T Th F 2-4:25. Mr. Shaw.

Fundamentals of astronomy with emphasis on the planets, moon, comets, meteors, the solar system as a unit. Telescopes. Night observation at Fuertes Observatory. Intended as a base for those who major in astronomy and as a survey for students from other fields.

### 202. INTRODUCTION TO ASTRONOMY

Spring term. Credit four hours. (Astronomy 201 is not prerequisite to Astronomy 202). M W F 9:05. Laboratory, M T Th or F 2-4:25. Mr. Shaw.

Fundamentals of astronomy with emphasis on the sun, stars, the galaxy, the sidereal universe. Spectroscopy. Night observation at Fuertes Observatory. Suitable for major students and as a survey for students from other fields.

### 305. CELESTIAL NAVIGATION

Spring term. Credit three hours. M W F 11:15. Mr. Shaw.

Celestial and space navigation. Theory of position determination on sea, in air, and in space. Air and Nautical Almanacs. Day and night practice with marine, standard bubble, and automatic sextants. Chart work.

### 332. ELEMENTS OF ASTROPHYSICS

Spring term. Credit three hours. Prerequisites, calculus and a course in modern physics. Hours to be arranged. Mr. Harwit.

Topics to be covered will include: Size, mass and age of stars, galaxies, and the Universe; stellar evolution and the formation of heavy chemical elements; interstellar matter and star formation.

### [338. ASTROCHEMISTRY]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisites, Astronomy 202, the calculus, and the consent of the instructor. Lectures M W F 11:15. Laboratory to be arranged. Mr. Shaw.

### 340. SPECIAL TOPICS IN ASTRONOMY

Fall or spring term. Credit two or four hours. Prerequisite, consent of the instructor. Mr. Shaw.

Instruction in selected topics for qualified students according to their needs and preparation. Observational techniques and instrumentation. Binary stars, orbital computation, coordinate measurement, photometry, and spectroscopy. Special attention to the problems of science teachers.

### 431. INTRODUCTION TO ASTROPHYSICS

Fall term. Credit three hours. Prerequisites, Physics 225, 226, and 303 or the equivalent. Mr. Muhleman.

Dynamics of planetary and stellar systems. Stellar structure and evolution. Binary, variable and peculiar stars. Nuclear synthesis in stars. Stellar atmospheres. Abundance of the chemical elements.

### 432. INTRODUCTION TO SPACE PHYSICS

Spring term. Credit three hours. Prerequisites, Astronomy 431 or consent of instructor. Mr. Muhleman.

## 50 BIOLOGICAL SCIENCES

Interstellar dust and gas. Evolution of the Stromgren sphere. Star formation. Interstellar magnetic fields, cosmic rays and radio emission. Interplanetary gas and dust. Comets, meteorites, and micrometeorites.

### 460. COSMICAL GAS DYNAMICS

Spring term. Credit three hours. Prerequisite, consent of instructor. Hours to be arranged. Given on sufficient demand. Mr. Axford.

Aspects of gas dynamics relevant to astrophysical problems (shock waves, turbulence, instabilities). Topics include stellar winds, novae, the expansion of gaseous nebulae, and the condensation of stars from the interstellar medium.

For complete descriptions of the following graduating courses see the *Announcement of the Graduate School*.

### 510. COSMOLOGY AND EVOLUTION

### 520. RADIO ASTRONOMY I

### 521. RADIO ASTRONOMY II

### 531. COSMIC RAYS

### 532. PHYSICS OF THE MAGNETOSPHERE

### 535. ASTRONOMY FROM ABOVE THE ATMOSPHERE

### 540. ADVANCED STUDY AND RESEARCH

### 560. STRUCTURE AND EVOLUTION OF STARS

## BIOLOGICAL SCIENCES

Dr. Robert S. Morison, Director; M. Alexander, H. W. Ambrose, J. M. Anderson, H. P. Banks, J. P. Barlow, D. M. Bates, C. O. Berg, D. W. Bierhorst, A. W. Blackler, W. L. Brown, T. J. Cade, J. M. Calvo, L. E. Carmichael, R. T. Clausen, R. K. Clayton, L. C. Cole, C. L. Comar, L. J. Daniel, E. A. Delwiche, W. C. Dilger, T. Eisner, S. T. Emlen, H. L. Everett, J. M. Fessenden-Raden, E. L. Gasteiger, J. L. Gaylor, A. J. Gibson, Q. H. Gibson, P. W. Gilbert, J. H. Gillespie, R. J. Guillory, D. J. Hall, B. P. Halpern, G. C. Hammes, W. Hansel, L. A. Heppel, G. P. Hess, R. W. Holley, A. T. Jagendorf, W. T. Keeton, E. B. Keller, J. M. Kingsbury, G. A. Knaysi, R. P. Korf, D. A. Lancaster, E. R. Lemon, S. L. Leonard, R. E. MacDonald, R. J. MacIntyre, R. E. McCarty, D. B. McCormick, W. N. McFarland, L. N. Miller, H. E. Moore, Jr., H. B. Naylor, A. L. Neal, W. L. Nelson, R. D. O'Brien, H. S. Penefsky, D. Pimentel, E. Racker, E. C. Raney, D. S. Robson, R. B. Root, F. Rosenblatt, R. L. Russell, M. M. Salpeter, H. A. Scheraga, H. W. Seeley, Jr., E. M. Shantz, L. I. Slobin, A. M. Srb, F. C. Steward, H. T. Stinson, E. L. Stone, D. N. Tapper, J. F. Thompson, B. V. Travis, C. H. Uhl, L. D. Uhler, P. J. VanDemark, A. vanTienhoven, W. J. Visek, B. Wallace, J. W. Wells, D. C. Wharton, J. H. Whitlock,

H. H. Williams, D. B. Wilson, W. A. Wimsatt, L. D. Wright, R. Wu, S. A. Zahler, D. B. Zilversmit.

Students are urged to apply for provisional admission to the biological sciences major during the second term of their freshman year or the first term of their sophomore year. Final admission to the specialization will require completion of (1) a year of biology (Biological Sciences 101-102 or 103-104), (2) a year of general chemistry (preferably Chemistry 107-108), and (3) a year of calculus (Math 111-112 or 111-122). Whenever possible, the student should include the above three subjects in his freshman schedule and complete organic chemistry and genetics in the sophomore year. It is also advisable for students anticipating a concentration in biochemistry or physiology to complete Physics 207-208 in the sophomore year, and all students should consider doing so. A student is not encouraged to undertake a specialization in biological sciences unless his performance in the courses listed above gives evidence of capacity to do satisfactory work at a more advanced level.

In addition to the introductory courses in chemistry, biological sciences, and mathematics, each major student must complete the following: (1) Chemistry 353-355 (or 357-358), (2) a year of physics (preferably Physics 207-208, but 101-102 is also accepted), (3) Biological Sciences 281 (Genetics), (4) Biological Sciences 431 (or 531) (Biochemistry), (5) the breadth requirement outlined below, (6) one of the concentration areas outlined below.

The breadth requirement is designed to insure that each major student becomes familiar with a minimum number of different aspects of modern biology. In fulfillment of this requirement, each student must pass one of the listed courses in two of the following eight categories: (1) *Behavior*: Biological Sciences 320, 421; Psychology 201, 323. (2) *Developmental Biology*: Biological Sciences 347, 385. (3) *Ecology and Evolution*: Biological Sciences 361, 475. (4) *Microbiology*: Biological Sciences 290. (5) *Morphology*: Biological Sciences 311, 313, 315, 345. (6) *Physical Science and Mathematics*: Chemistry 236, 387 or 389; Geology 101 or 106; Mathematics 213 or 221; Plant Breeding 410. (7) *Physiology*: Biological Sciences 240, 413, 414. (8) *Taxon-oriented Courses*: Biological Sciences 270, 315, 341, 343, 344. Entomology 212; Plant Pathology 309.

The concentration requirement is designed to help the student achieve depth in some area of biology of his own choosing. It permits maximum flexibility, while insuring that the selection of advanced courses will form a coherent and meaningful unit. The student should seek the advice of his adviser in selecting the courses he will take in fulfillment of both the breadth and concentration requirements. The possible concentration areas are:

(1) *Animal Physiology and Anatomy*: Twelve hours, usually selected from the following: Biological Sciences 311, 313, 315, 385, 410, 412, 413, 413A, 414, 419, 511, 511A, 512, 513; Animal Science 427-428; Poultry Science 425, 520; Veterinary Medicine 924.

(2) *Behavior*: Biological Sciences 320 and 11 hours to be selected in consultation with the adviser.

(3) *Biochemistry*: The student must fulfill the organic chemistry and biochemistry core requirements by taking Chemistry 357-358 and Biological Sciences 531. Chemistry 236 must be taken under the breadth requirement. In addition, the student should take Chemistry 389-390 (or 387-388) and Biological Sciences 533.

(4) *Botany*: Biological Sciences 240, 341, 345, 347 (two of these courses may be selected under the breadth requirement), plus seven additional hours in botany or closely related subjects chosen in consultation with an adviser representing his major interest in botany.

(5) *Ecology and Evolution*: At least 14 hours, selected in consultation with an adviser, usually from courses in the following areas: biogeography, biogeochemistry, comparative physiology, ecology (including plant ecology and quantitative ecology), evolution, limnology, marine ecology and oceanography, meteorology and climatology, parasitology, systematics. A course in introductory ecology, a course in systematics, and a course in physiology must be included here or under the breadth requirement.

(6) *Genetics and Development*: Twelve hours, usually selected from the following: Biological Sciences 347, 385, 480, 482, 486, 495, 584, Plant Breeding 410.

(7) *Microbiology*: Biological Sciences 290, which may be selected under the breadth requirement, plus 12 hours in courses in basic microbiology, including at least two with a laboratory (such as 390B, 490B, 495, Veterinary Medicine 340).

Students who, for good reason, wish to undertake a course of studies not covered by these seven concentration areas may petition for permission to do so.

Students interested in teaching biology in secondary schools may specialize in Biological Sciences for the B.A. degree and then complete the requirements for the M.A.T. (Master of Arts in Teaching) degree during a fifth year in the School of Education. The fifth year includes one semester of graduate study in the sciences, a summer of preparation for teaching, and one semester of internship in a secondary school. Stipends and fellowship support are available to selected candidates in the fifth year. A student interested in the five-year program leading to secondary school teaching is urged to consult his adviser and an adviser in the School of Education during his freshman year.

An Honors program offers the superior student an opportunity to do independent work under the supervision of a member of the Division. This usually entails independent laboratory work on a project in addition to writing a thesis. Candidates for this program must have at least a 2.7 cumulative average with a 3.0 average in the sciences and obtain a sponsor within the Division. An Honors candidate may enroll in research courses offered by his sponsor. No more than four credit hours of research courses can be used for completion of the requirements in the area of concentration. Recommendation to the faculty that a candidate graduate with Honors will be the responsibility of the Honors Program Committee. Students interested should consult the Office of the Division of Biological Sciences for further details, preferably during the first term of the junior year.

The Distribution requirement in biological sciences for non-majors is satisfied by Biological Sciences 101-102 or 103-104. A student may qualify for advanced standing credit and/or placement in biological science by superior performance on the Advanced Placement Examination in biology or on a special placement examination to be given at entrance to students who present evidence of particularly thorough training in the subject.

Students enrolling in research courses are required to obtain permission from a sponsoring professor.

## General Courses

### 101-102. BIOLOGICAL SCIENCES

Fall and spring terms. Credit three hours a term. Course 101 is prerequisite to Course 102, unless special permission is obtained from the instructor. Lectures, M W F 8 or M W F 10:10. Laboratory, M T W Th or F 1:30-4:25, or Th F or S 8-11:00, or T Th or F 10:10-1:00, or S 9:05-11:55, or T W 7:30-10:20 P.M. Neither the Friday lecture nor the laboratory will meet every week. Two preliminary examinations will be given each term at 7:30 in the evening. Messrs. Keeton and Ambrose, Mrs. McGlashan, guest lecturers, and assistants.

Designed both for students who intend to specialize in biological sciences and for those specializing in other subjects, such as the social sciences or humanities, who want to obtain a thorough knowledge of biology as part of their general education. Plant and animal materials are considered together rather than in separate units. The fall semester covers cellular biology, the biochemistry of metabolism, physiology and anatomy, and behavior. The spring semester includes genetics, developmental biology, evolutionary theory, the biology of populations and communities, the origin of life, and evolutionary patterns in the plant and animal kingdoms. Each topic is considered in the light of modern evolutionary theory.

The Friday lectures, given approximately every other week, will be by outstanding faculty members of the University, lecturing on their own field of research. The intent is to acquaint students with the excitement and promise of modern biological research, both basic and applied, and, more particularly, with the research being done at Cornell.

### 103-104. PLANT AND ANIMAL BIOLOGY

Fall and spring terms. Credit three hours a term. Limited to 500 students. A student may enter course 106, following 103, to complete a year's credit. Lectures, T Th 9:05 or 11:15. Laboratory, M T W Th or F 1:25-4:25, or M or T 10:10-1:10, or S 8-11 or 10:10-1:10. Two preliminary examinations will be given each term at 7:30 in the evening (Oct. 17, Nov. 21, Mar. 5, Apr. 18). Fall term, Mr. Banks; spring term, Mr. Leonard.

Designed to give students an understanding of the growth, development and evolution of plants and animals and their role in nature. This integrated course provides the basic knowledge necessary for those who intend to specialize in some aspect of plant or animal sciences.

Plant biology (fall term) emphasizes the dynamic aspects of plant function, structure, growth and evolution. In laboratory emphasis is placed on experimentation and analysis of living material. One period is devoted to field work. Biological principles are developed from a firsthand study of specific organisms and their function and interrelationships.

Animal biology (spring term) deals with the functional aspects of organ systems of animals beginning with the more familiar forms which serve as a point of reference. Material will include an introduction to the biochemical features of metabolism and regulatory control. Representatives of the major phyla will be used to illustrate biological principles.

#### 106. INTERMEDIATE PLANT BIOLOGY

Spring term. Credit three hours. No specific prerequisite but most students will have had at least 103 or its equivalent. Lectures, T Th 9:05. Laboratory, M T or W 1:25-4:25. Mr. Banks and Mr. Basson.

Designed to provide a basic understanding of the structure, function, reproduction, and relationships of representatives from diverse plant groups. Intended for those who plan to specialize in some aspect of the plant sciences. Whenever possible students will be involved in the field collection of their own laboratory materials. Students will be encouraged to carry out a project of their own choice, possibly in collaboration with staff members in botany or in allied plant science departments.

#### 301. LABORATORY METHODS IN BIOLOGY

Either term. Credit three hours. Prerequisites, Biological Sciences 101-102 or 103-104. Limited to juniors, seniors, and graduate students; 20 students per section. Lecture-laboratory, T or F 10:10-12:35, and additional periods by appointment. Mr. Uhler.

For students who intend to teach or to follow some phase of biology as a profession. Subjects covered: collection, preservation, and storage of materials; the preparation of bird and mammal study skins; injection of circulatory systems with latex; clearing and staining of small vertebrates; and the preparation and staining of smears, whole mounts, and sections.

#### MATHEMATICAL AND STATISTICAL MODELS IN BIOLOGY

(Statistics 410)

#### 401. TEACHING BIOLOGY

Spring term. Credit four hours. Enrollment limited; permission to register required. Messrs. Keeton and Ambrose.

Practice in teaching college biology; seminars on new developments. S and U grading optional.

#### 409. RESEARCH IN BIOLOGY

Either term. Credit and hours to be arranged. Staff.

Practice in planning, conducting, and reporting independent laboratory and/or library research programs. S and U grading optional.

#### 600. SPECIAL TOPICS IN BIOLOGY

Fall or spring terms. Credit and hours to be arranged. Enrollment limited to students in the Ford Scholar's Program. Mr. Hall.

Discussion of topics of special biological interest and seminars by outstanding faculty members from various departments at Cornell and other institutions. Designed to acquaint students with the excitement and promise of modern biological research.

#### 602. SEMINAR FOR M.S.T. DEGREE CANDIDATES

Spring term. Credit one hour. Hours to be arranged. Mr. Uhler.

Discussion and evaluation of new approaches to biological instruction.



# Animal Physiology and Anatomy

## 210. HUMAN PHYSIOLOGY

Spring term. Credit three hours. Prerequisites, Chemistry 103 desirable; students must at least have taken high school courses in biology and chemistry. Lectures, M W F 10:10. Staff.

Basic concepts of human anatomy and physiology will be presented to provide the groundwork for the understanding of the functioning of the human body in health and disease. Emphasis will be placed on the relationship of human physiology to problems of public health and contemporary living. The individual systems, such as cardiovascular, gastrointestinal, neurological, endocrine, renal, etc., will be discussed singly and in correlation with each other. Guest lecturers will be invited as appropriate.

## 311. COMPARATIVE ANATOMY OF VERTEBRATES

Fall term. Credit four hours. Prerequisites, Biological Sciences 101-102 or 103-104. Lectures, M W 11:15. Laboratory, M F or T Th 1:25-4:25, or T Th 8-11, or W 1:25-4:25 and S 8-11. Mr. Evans.

Dissections and demonstrations of representative vertebrate types, including fish, amphibian, reptile, bird, and mammal. Intended to give students an appreciation of man's structural heritage and some insight into the interrelationship of form and function among the vertebrates.

## 313. HISTOLOGY: THE BIOLOGY OF THE TISSUES

Fall term. Credit four hours. Prerequisites, a two-semester introductory biology sequence; comparative anatomy and organic chemistry or biochemistry desirable. Lectures, T Th 11:15. Laboratory, T Th 8-9:55 or 2:30-4:25. Mr. Wimsatt.

A general course dealing with the biology of the tissues to provide the student with a basis for understanding the microscopic and fine structural organization of vertebrates and the methods of analytic morphology at the cell and tissue levels. The dynamic interrelations of structure, chemical composition and function in cells and tissues are stressed.

## 315. INVERTEBRATE ZOOLOGY

Fall term. Credit four hours. Prerequisite, at least one year of biological science; others by permission of instructor. Lectures, W F 11. Laboratory, W F 2-4:20. Mr. Anderson.

Lectures on selected topics in the development, structure, function, and interrelations of invertebrate animals, with particular attention to phylogenetic aspects. Intensive laboratory work in representative invertebrates, utilizing living or fresh specimens wherever possible. A significant amount of independent work is required of each student, including reports on library research.

## ANIMAL EMBRYOLOGY

(Biological Sciences 385)

## INSECT MORPHOLOGY AND HISTOLOGY

(Entomology 322)

## [410. PROBLEMS IN FUNCTIONAL VERTEBRATE ANATOMY]

Not offered in 1967-68.

Spring term. Credit four hours. Given in alternate years. Prerequisites,

Biological Sciences 311 and consent of instructor. Lecture W 9:05; also discussion period to be arranged. Laboratory, W-F 1:25-4:25. Mr. Gilbert.

## VERTEBRATE MORPHOLOGY

(Veterinary Medicine 900)

### 412. SPECIAL HISTOLOGY: THE BIOLOGY OF THE ORGANS

Spring term. Credit four hours. Given in alternate years. Prerequisites, Biological Sciences 313, or consent of instructor. Enrollment limited to 18 students. Lectures, W F 9:05. Laboratory, W F 2-4:45. Mr. Wimsatt.

A continuation of Biological Sciences 313. The microscopic and ultrastructural organization of the principal vertebrate organ systems are studied in relation to their development, functional interaction and special physiological roles. Biological Sciences 313 and 412 together present the fundamental aspects of the microscopic and submicroscopic organization of the vertebrate body from a physiological perspective. The organization of the course involves student participation in "lecture-seminars," and the prosecution of independent project work supplementary to the regular work of the laboratory. The latter enables students to gain practical experience with histological and histochemical preparative techniques.

### 413. GENERAL ANIMAL PHYSIOLOGY, LECTURES

Fall term. Credit three hours. Prerequisites, one year of biology and courses in chemistry; organic chemistry and biochemistry desirable. Lectures, M W F 10:10. Mr. McFarland and Mrs. Salpeter.

The principles of animal physiology are developed through consideration of the functioning of cells, tissues and organs. Specific topics discussed include respiration, metabolism, circulation, excretion, chemical integration, muscle contraction, nerve action and sensory reception.

### 413A. GENERAL ANIMAL PHYSIOLOGY, LABORATORY

Fall term. Credit one hour. Prerequisites, Biological Sciences 413 or equivalent must be taken concurrently. Lecture W 2, alternate weeks only. Laboratory, T 8-11 or M T Th or F 1:25-4:25, alternate weeks. Mr. McFarland.

Students are introduced to basic techniques utilized in the study of the physiology of animal tissues. Experiments cover topics dealing with respiration, properties of muscle, circulation, activity of nerves and osmotic phenomena.

## FUNDAMENTALS OF ENDOCRINOLOGY

(See Animal Science 427-428)

## COMPARATIVE PHYSIOLOGY OF REPRODUCTION OF VERTEBRATES

(See Poultry Science 425)

### 414. MAMMALIAN PHYSIOLOGY

Spring term. Credit six hours. Prerequisites, a year of biological sciences and permission to register; courses in biochemistry, histology, and anatomy desirable. Lectures, M W F 8. Laboratory, M W 1-6. Mr. Visek (in charge), Messrs. Gasteiger, Gibson, and Hansel.

A general course in mammalian physiology including circulation, respiration, digestion, metabolism, renal function, endocrinology and the nervous system.

**416. ADVANCED INVERTEBRATE ZOOLOGY**

Spring term. Credit four hours. Prerequisites, Biological Sciences 371 or equivalent, and permission of instructor; enrollment limited. Lectures, W F 11. Laboratory, W F 2-4:25. Mr. Anderson.

Lectures and seminars (involving student participation by means of prepared reports) on significant problems in invertebrate zoology; laboratory and field work on selected invertebrate groups.

**419. RESEARCH IN ANIMAL PHYSIOLOGY AND ANATOMY**

Either term. Credit and hours to be arranged. Staff.

Practice in planning, conducting, and reporting independent laboratory and/or library research programs.

**[511. CELLULAR PHYSIOLOGY LECTURES]**

Not offered in 1967-68.

Fall term. Credit three hours. Prerequisites, previous courses in animal or plant physiology and biochemistry desirable. Lectures, M W 11:15.

**[511A. CELLULAR PHYSIOLOGY LABORATORY]**

Not given in 1967-68.

Fall term. Credit two hours. Prerequisite, consent of the instructor. Enrollment is limited. Laboratory, W or Th 1:25-4:25.

**[512. COMPARATIVE PHYSIOLOGY]**

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisites, Biological Sciences 413 or 414 and biochemistry or the equivalent.

**513. EXPERIMENTAL ENDOCRINOLOGY**

Fall term. Credit two or three hours. Prerequisites, a year of zoology or its equivalent, organic chemistry, physiology and consent of instructor. Primarily for graduate students, open to undergraduates for two credits. Lectures, M F 11:15-12:05. Laboratory, M or F 1:25-4:25. Mr. Leonard.

Lectures on the anatomy and physiology of the vertebrate endocrine glands, glandular interrelationships, mechanisms of hormone action, chemical and physiological properties of the hormones, assay methods. Laboratory includes small animal surgery, micro technique for the endocrines, illustrative experiments on the effects of hormones.

**516. SPECIAL TOPICS IN COMPARATIVE PHYSIOLOGY**

Spring term. Credit and hours to be arranged. Prerequisite, consent of instructor. For advanced students in biological sciences. Mr. McFarland.

Detailed consideration of selected topics in comparative physiology. Preparation of demonstration experiments stressing technique and individual research problems will be included. Topics vary from year to year.

**GENERAL PHOTOBIOLOGY**

(Biological Sciences 547)

**ELEMENTS OF PHYSICAL BIOLOGY**

(Veterinary Medicine 920)

Fall term. Credit three hours. T Th F 11. Prerequisites, basic courses in chemistry, physics, biology and calculus, or consent of the instructor. Mr. Comar and staff.

Lectures on atomic, molecular and cellular aspects of matter; physico-chemical concepts in biology; membrane phenomena; mathematical approaches; compartmental analysis; tissue culture; informational macromolecules; biological coding and control.

## Neurobiology and Behavior

### 320. NEUROBIOLOGY AND BEHAVIOR

Spring term. Credit three hours. Prerequisites, Biological Sciences 101-102 or 103-104. Limited to juniors, seniors, and graduate students. Lectures, T Th S 11:15. Mr. Eisner (in charge), Messrs. Gilbert, O'Brien, Dilger, Halpern, Rosenblatt, and Emlen.

Evolution of behavior, cueing of behavior, social and non-social behavior, neuroanatomy, neurophysiology, neurochemistry, neural networks, memory.

### 421. COMPARATIVE VERTEBRATE ETHOLOGY

Fall term. Credit three hours. Prerequisites, Biological Sciences 101-102 or 103-104, and 320, and permission of the instructor. Lectures, T Th 9:05. Laboratory, to be arranged. Mr. Dilger.

A survey of the methods and principles of vertebrate ethology for students specializing in this field or for those in other branches of zoology wishing to broaden their knowledge of animal behavior. Emphasis is placed on the causation, function, biological significance, and evolution of species-typical behavior. The laboratories are designed to give firsthand knowledge of the material covered in lectures.

### PHYSIOLOGICAL PSYCHOLOGY

(Psychology 323)

### COMPARATIVE PSYCHOLOGY

(Psychology 326)

### 427. SENSORY FUNCTION

(Also Psychology 427)

Fall term. Credit three hours. Prerequisite, Biological Sciences 320 or equivalent. T Th F 8. Mr. Halpern and Mr. Tapper.

Sensory receptors and the central nervous system transformation of afferent activity will be considered in relation to human and animal psychophysical data and to the adaptive significance of behavior. The receptor will be examined in terms of anatomy, biochemistry, biophysics of transduction, and the central nervous-system control of peripheral input. Information and signal detection theories will be applied.

### 428. SENSORY FUNCTION LABORATORY

(Also Psychology 428)

Spring term. Credit two hours. Prerequisite, Biological Sciences 427. Enrollment limited to 15 students. Hours to be arranged. Messrs. Halpern and Tapper.

Experiments on the principles of receptor function and afferent neural activity.

### 429. RESEARCH IN NEUROBIOLOGY AND BEHAVIOR

Either term. Credit and hours to be arranged. Staff.

Practice in planning, conducting, and reporting independent laboratory and/or library research programs. S and U grading optional.

#### [520. COMPARATIVE NEUROLOGY]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, permission of instructor. Lecture, T Th 12:20. Laboratory, M or W 2-4:25.

A comparative study of the vertebrate nervous system with emphasis upon the primate. Studies include dissections of the brain and the identification of nuclei and tracts in sections of the brain and spinal cord. Functional aspects of anatomical relations are stressed.

#### 521-522. BRAIN MECHANISMS AND MODELS

Throughout the year. Credit four hours a term. Prerequisites, calculus, introductory biology or psychology, graduate or advanced undergraduate standing, and consent of instructor. Acquaintance with modern algebra and probability theory is desirable. Lectures, M W 7:30 p.m. Laboratories to be arranged. Mr. Rosenblatt.

Fall semester: review of fundamentals of neurophysiology; psychological and physiological criteria for brain models; computers and digital automata in relation to brain mechanisms; review of representative models; theory of elementary perceptrons. Spring semester: theory of multi-layer and cross-coupled perceptrons; recognition of temporal patterns; problems of figure organization, cognitive sets, sequential programs, and other problems of advanced models; contemporary theories of memory. S and U grading optional.

#### 523. ECOLOGICAL ASPECTS OF ANIMAL BEHAVIOR

Fall term. Credit three hours. Prerequisites, Biological Sciences 320 (Neurobiology and Behavior) and Biological Sciences 361 (General Ecology) or equivalent, or permission of instructor. Lectures M W F 9:05. Messrs. Emlen and Ambrose.

A discussion of the interrelationships of animal behavior and ecology, with emphasis placed upon the following topics: behavioral adaptations to the environment; ecological significance of diverse social systems; spatial relationships (habitat selection, homing, orientation, and navigation); role of social behavior in population regulation; evolution of altruistic behavior. S and U grading optional.

#### FUNCTIONAL ORGANIZATION OF THE NERVOUS SYSTEM

(Veterinary Medicine 924)

Fall term. Credit three hours for lecture, two hours for laboratory. Lectures, M W F 10:10. Laboratory, W bi-weekly. Prerequisites, physiology, organic chemistry, physics, and/or consent of instructor. Physical chemistry and neuroanatomy desirable. Professor Gasteiger.

Function of the nervous system is considered primarily from an electrophysiological viewpoint. Where appropriate, important studies of reflexology, chemical and feedback control, and comparative anatomy are utilized. Laboratory studies include electrical activity of cells, reflexes, decerebrate rigidity, acoustic microphonic response, subcortical stimulation, and evoked and spontaneous cortical activity.

#### 620. SEMINAR IN NEUROBIOLOGY AND BEHAVIOR

Either term. Credit one hour. Intended primarily for senior undergraduates. Hours to be arranged. (Organizational meetings Sept. 11 and Jan. 29, 8 p.m., Comstock 145.) Staff. S and U grading optional.

## 622. SEMINAR IN ECOLOGICAL ANIMAL BEHAVIOR

Spring term. Credit one hour. Open to qualified graduate and undergraduate students who have taken courses in animal behavior and animal ecology and have secured the permission of the instructor. Mr. Ambrose. S and U grading optional.

# Biochemistry

## 231. INTRODUCTORY BIOCHEMISTRY

Fall term. Credit three hours. Prerequisites, Chemistry 104 or 108, or the equivalent. May not be taken for credit by students who have completed a more advanced course in this section. Lectures, T Th F 12:20. Mr. Williams.

A brief survey of organic chemistry as related to biological compounds and a discussion of selected biochemical reactions associated with the metabolism of animals, plants, and microorganisms. Especially designed as a general course for four-year students.

## 431. PRINCIPLES OF BIOCHEMISTRY, LECTURES

Fall term. Credit four hours. Prerequisites, Organic Chemistry 353-355 or the equivalent. Lectures, M 8, T Th S 8. Miss Daniel.

A basic course dealing with the chemistry of biological substances and their transformations in living organisms.

## 433. PRINCIPLES OF BIOCHEMISTRY, LABORATORY

Spring term. Credit three hours. Prerequisites, quantitative analysis, or permission of the instructor. Must be taken with or following Course 431. Laboratory, M W 2:30-5:00; discussion period M 1:25. Preliminary examinations will be held on March 7 and April 11, 1968. Mr. Neal and Mrs. Fessenden-Raden.

Laboratory practice with biochemical substances and experiments designed to illustrate reactions which may occur in biological systems.

## 439. RESEARCH IN BIOCHEMISTRY

Either term. Credit hours to be arranged. For undergraduate students concentrating in biochemistry. Prerequisite, adequate ability and training for the work proposed. Staff.

Special work in any branch of biochemistry on problems under investigation by the staff of the Section.

## 530. BIOCHEMISTRY OF THE VITAMINS

Spring term. Credit two hours. Given in alternate years. Prerequisite, Chemistry 353-355 and Biological Sciences 431 or their equivalent. Lecture T Th 10:10. Miss Daniel.

## 531. GENERAL BIOCHEMISTRY, LECTURES

Fall term. Credit four hours. Prerequisites, Chemistry 358 or the equivalent. Lectures, M W F S 9:05. Mr. Calvo and staff.

An integrated treatment of the fundamentals of biochemistry.

## 533. GENERAL BIOCHEMISTRY, LABORATORY

Fall term. Credit three hours. Prerequisites, Chemistry 358 and Chemistry 388 or 390. Must be taken with or following Biological Sciences 531. Laboratory, T or Th 9:05-4:25. One discussion period to be arranged. Messrs. Nelson, Wharton, and McCarty.

Selected experiments on carbohydrates, lipids, proteins, amino acids, nucleic acids, and metabolism (cellular particulates, kinetics, general enzymology) will be given to illustrate basic biochemical principles. Emphasis on the quantitative aspects rather than qualitative identifications.

#### 534. ADVANCED GENERAL BIOCHEMISTRY, LECTURES

Spring term. Credit four hours. Prerequisites, Biological Sciences 531 and Physical Chemistry 390 or permission of instructor. Lectures, M W F S 9:05. Mr. Guillory and staff.

A broad treatment of biochemistry at an advanced level.

#### 536. ADVANCED BIOCHEMISTRY, LABORATORY

Spring term. Credit three hours. Prerequisites, Biological Sciences 533 and Biological Sciences 534 (may be taken concurrently). Graduate majors in biochemistry only. Registration by permission of instructor before November 1. Laboratory M W 1:25-4:25; additional periods to be arranged. Miss Keller and Messrs. Penefsky, Wu, and Gibson.

Research techniques in biochemistry and molecular biology.

#### 537-538. ADVANCED BIOCHEMISTRY, LECTURES

Fall and spring terms. Credit one or two hours per term. Students may take one or more sections of the course for one to four hours credit, as each section may be taken without having taken a preceding section. Prerequisite, Biological Sciences 534. Lecture, T Th 9:05.

Will be comprised of advanced lectures divided into four sections of one hour credit each. Fall term, Mr. Gaylor, carbohydrates and lipids, one hour; Mr. Hess, proteins and enzymes, one hour. Spring term, Mr. Holley, nucleic acids and control mechanisms, one hour; Mr. McCormack, coenzymes, one hour.

#### 631. GRADUATE SEMINAR IN BIOCHEMISTRY

Fall and spring term. Credit one hour per term. W 8:35. Mr. Racker.

Required of all graduate students majoring in biochemistry, and may be repeated for credit.

#### 639. BIOCHEMISTRY SEMINAR

Fall and spring terms. No credit. F 4:15. Staff.

Lectures on current research in biochemistry presented by distinguished visitors and staff.

## Botany

#### 240. PLANT PHYSIOLOGY

Spring term. Credit five hours. Primarily for undergraduates; open to graduate students without background in plant physiology. Prerequisites, Biological Sciences 101-102 or 103-104, and introductory chemistry. Prior or simultaneous courses in organic chemistry or biochemistry are desirable. Lectures, T Th S 10:10. Conference, M 12:20-1:10. Laboratory, M T W Th or F 1:25-4:25. Mr. Jagendorf and assistants.

The behavior, growth, and environmental responses of plants, primarily but not exclusively higher plants. Topics will include membrane properties, solute and water transport, the uses of osmotic forces; mineral nutrition; organic nutrition, growth characteristics, hormone action; light, gravitational

and temperature responses; diurnal rhythms, photoperiod; saline, drought and freezing injury; and some aspects of infection, disease resistance, respiration, and photosynthesis.

### 341. TAXONOMY OF VASCULAR PLANTS

Fall term. Credit four hours. Prerequisite, a course in botany or permission to register. Lectures and discussions, T Th 9:05. Laboratory, T Th 2-4:25. Mr. Clausen.

An introduction to the classification of vascular plants, with attention to principles, methods of identification, and literature. In the first part of the term, trips are held in laboratory periods.

### [343. BIOLOGY OF THE ALGAE]

Not offered in 1967-68.

Fall term. Credit three hours. Prerequisite, Biological Sciences 101-102 or 103-104 or permission of the instructor. Lectures, M W 11:15. Laboratory, M or F 2-4:25. Mr. Kingsbury.

### [344. BIOLOGY OF THE ALGAE]

Not offered in 1967-68.

Spring term. Credit three hours. Prerequisite, Biological Sciences 101-102 or 103-104 or permission of the instructor. Lectures, T Th 11:15. Laboratory, M or F 2-4:25. Mr. Kingsbury.

## COMPARATIVE MORPHOLOGY OF FUNGI

(Plant Pathology 309)

### 345. PLANT ANATOMY

Fall term. Credit four hours. Prerequisites, Biological Sciences 101-102 or 103-104 and preregistration with instructor in charge. Lectures, T Th 8. Laboratory T Th 10:10-12:35 or M W 2-4:25. Mr. Bierhorst.

A detailed study of plant histology with equal emphasis on developmental aspects and mature structure.

### 347. CYTOLOGY

Fall term. Credit four hours. Prerequisite, Biological Sciences 101-102 or 103-104 or the equivalent. Lectures M W 9:05. Laboratory, M W or T Th 10:10-12:35. Mr. Uhl.

A study primarily of the structure of cells and their components and the relation of these to function and to heredity. Special attention is given to chromosomes. Both plant and animal material are used.

### 349. PLANTS AND MAN

Fall term. Credit two hours. Prerequisites, Biological Sciences 101-102 or 103-104 or the equivalent. Lectures, M W 9:05. Mr. Bates.

A consideration of the role of plants in the human environment and in the evolution of human culture with emphasis on the utilization of plants in nutrition, housing, clothing, medical care, industry, and the arts.

### [440. CYTOGENETICS]

Not offered in 1967-68.

Spring term. Credit three hours. Prerequisites, Biological Sciences 347 and 281 or the equivalent. Lectures, M W 9:05. Laboratory, M or W 10:10-12:35. Mr. Uhl.



## 442. TAXONOMY AND ECOLOGY OF VASCULAR PLANTS

Spring term. Credit four hours. Prerequisite, Biological Sciences 341 or permission to register. Lectures and discussions, T Th 9:05. Laboratory, T Th 2-4:25. Mr. Clausen.

A study of the principles of classification, the fundamentals of geographical distribution, and the evolutionary importance of environmental variation. Laboratory periods in the second half of the term are devoted to study of natural populations in the field.

## 444. MORPHOLOGY OF LOWER VASCULAR PLANTS

Spring term. Credit four hours. Given in alternate years. Prerequisites, Biological Sciences 345 and preregistration with instructor in charge. Lectures, M W 12:20. Laboratory, M W 2-4:25. Mr. Bierhorst.

An advanced course in the comparative morphology, life histories, and phylogeny of the non-seed-bearing vascular plants, including consideration of structure, development and morphogenesis as applied to morphological interpretation.

## [446. MORPHOLOGY OF HIGHER VASCULAR PLANTS]

Not offered in 1967-68.

Spring term. Credit four hours. Given in alternate years. Prerequisites, Biological Sciences 345 and preregistration with instructor in charge. Lectures, M W 12:20. Laboratory, M W 2-4:25. Mr. Bierhorst.

## [448. PALEOBOTANY]

Not offered in 1967-68.

Spring term. Mr. Banks.

## 449. RESEARCH IN BOTANY

Fall or spring term. Credit and hours to be arranged. Staff.

Students engaged in special problems or making special studies may register in this course. They must satisfy the instructor under whom the work is taken that their preparation warrants their choice of problem.

## 541-542. PLANT PHYSIOLOGY, ADVANCED LECTURE COURSES

Fall and spring terms. Credit three hours a term. Primarily for graduate students, but undergraduates will be admitted by prior approval of instructor. Prerequisite, Biological Sciences 240 or its equivalent; Biological Sciences 541 is a desirable but not a required prerequisite for 542. Lectures, M W F 10:10. Mr. Steward.

*Fall term.* Cells and cell physiology; properties of protoplasm, its membranes and organelles; relations of cells, tissues, and organs to water and solutes; water relations and stomatal behavior; inorganic plant nutrition; the essential nutrient elements.

*Spring term.* Plant metabolism and organic nutrition; photosynthesis, respiration, nitrogen metabolism; translocation, physiology of growth and development.

## [545. PHYSICAL APPROACHES TO PROBLEMS OF PHOTOSYNTHESIS]

Not offered in 1967-68.

Fall term. Credit three hours. Given in alternate years. Prerequisites, Chemistry 104 or 108, Mathematics 112, Physics 208, or by the permission of the instructor. Lectures, M 1:25, T Th 10:10. Mr. Clayton.

Emphasis is on physical and photochemical mechanisms and physical experimental approaches. Photosynthetic organisms: their photochemical apparatus, metabolic pathways, and mechanisms for energy conversion. Descriptive introduction to the physics of excited states in molecules and molecular aggregates. Optical and photochemical properties of chlorophyll, and of living photosynthetic tissue. Contemporary investigations of the photosynthetic mechanism. The level of the course can be judged by consulting R. K. Clayton, *Molecular Physics in Photosynthesis* (Blaisdell Publishing Co., Waltham, 1965).

#### 547. GENERAL PHOTOBIOLOGY

Fall term. Credit three hours. Given in alternate years. Prerequisites, same as for Biological Sciences 545. Lectures, M 1:25, T Th 10:10. Mr. Clayton.

A survey of systems of current interest in photobiology, including photosynthesis, bioluminescence, vision, photoperiodism, and the action of ultraviolet on nucleic acids. Physical concepts and methodologies are emphasized.

#### 548. PLANT PHYSIOLOGY: ASPECTS OF METABOLISM

Spring term. Credit three hours. Given in alternate years. Prerequisites, Biological Sciences 240 and 431; Chemistry 353; or the equivalent. Lectures, M W F 9:05. Messrs. Jagendorf, Thompson, McCarty, and staff.

Selected areas of plant biochemistry will be reviewed in the context of the plant life cycle and responses to the environment. Probable topics include metabolism and storage function of lipids, carbohydrates, organic acids, proteins and pigments; nitrogen and sulfur assimilation; hormone metabolism; respiration, photosynthesis, development and replication of mitochondria and chloroplasts; cell wall composition and properties. Emphasis will be on operation of control mechanisms.

#### 587. PERSPECTIVES IN PLANT PHYSIOLOGY

Advanced lecture series. Fall term. M W F 10:10. Mr. Steward.

This lecture course, offered in the first semester, is an alternative, wholly or in part, to the sequence 541 and 542. Normally it will not be offered when the more complete sequence is given. Primarily intended for graduate students, but open to qualified undergraduates, the course will review salient topics in plant physiology, their present status, historical development, and the problems they still present. Topics considered will change somewhat from year to year but will normally include some treatment of cell physiology, organic and inorganic nutrition, metabolism, growth and development.

Interested students may attend the lectures either with or without course credit; S and U grading available if desired.

#### PLANT ECOLOGY

(Biological Sciences 463 and 563)

#### ADVANCED MYCOLOGY

(Plant Pathology 549 and 599)

#### 641. SEMINAR IN TAXONOMY AND ECOLOGY OF VASCULAR PLANTS

Fall term. Credit one hour. Prerequisite, Biological Sciences 442 or permission to register. Lecture and discussion. M 11:15. Mr. Clausen.

For description see Announcement of the Graduate School.

### 643. SEMINAR IN PLANT PHYSIOLOGY

Fall and spring terms. Credit one hour per term. Required of graduate students taking work in plant physiology and open to all who are interested. F 11. Staff.

For description see Announcement of the Graduate School.

### CURRENT TOPICS IN MYCOLOGY

(Plant Pathology 649)

## Ecology, Evolution, and Systematics

### 270. BIOLOGY OF THE VERTEBRATES

Spring term. Credit four hours. Prerequisite, Biological Sciences 101-102 or 103-104. Lectures, M W 10:10. Laboratory M W or T Th 2:30-4:25. Staff.

An introduction to the evolution, classification, life history and ecology, and behavior of vertebrate animals. Laboratory and field work is concerned with structure, classification, taxonomic methods, biology of local species, and studies of selected aspects of vertebrate life, including food habits, activity cycles, behavior, and physiological adaptation.

### INSECT BIOLOGY

(Entomology 212)

### PLANT TAXONOMY

(Biological Sciences 341, 442, 641)

### INVERTEBRATE ZOOLOGY

(Biological Sciences 315)

### 361. GENERAL ECOLOGY

Fall or spring term. Credit three hours. Prerequisite, Biological Sciences 101-102 or 103-104 or the equivalent. (Not open to freshmen). Lectures T Th 9:05. Discussion, W or Th 1:25, 2:30, or 3:35. Fall, Mr. Root; spring, Mr. Feeny.

Principles governing the survival of plants and animals in their natural environment are discussed. Population dynamics are studied with attention given to competition, social behavior, predation, parasitism, and other biotic interactions. Consideration is given to the flow of energy and minerals through living systems and to the influence of climate on the abundance and distribution of organisms. The role of species diversity, dispersal, and succession are focused on with regard to natural communities. The organization of species populations and communities is interpreted in the light of modern evolutionary theories.

### 362. LABORATORY AND FIELD ECOLOGY

Fall or spring term. Credit two hours. Prerequisite, permission of instructor. Laboratory, T Th 2-4:25. Mr. Cole and others.

A laboratory and field course to accompany or follow Biological Sciences 361, for students who intend to concentrate in the area of ecology. Enrollment limited. This course will give the students a first-hand contact with ecological techniques.

### SOIL MICROBIOLOGY

(Agronomy 306)

INTRODUCTORY INSECT TAXONOMY

(Entomology 331)

INTRODUCTORY PARASITOLOGY

(Entomology 351)

BIOLOGY OF THE ALGAE

(Biological Sciences 343, 344)

374. FIELD MARINE BIOLOGY

Credit two hours. Prerequisite, a full year of college biology. A special course offered on Star Island, off Portsmouth, New Hampshire, June 10-24, 1967. Messrs. Anderson, Gilbert, Hewitt, Raney, Barlow, and Kingsbury (in charge). S or U grades only.

Living material and habitats will be emphasized in introducing students to the major disciplines of marine biology and in rounding out the student's knowledge of these topics as presented at inland locations. For more details, see the *Announcement of the Summer Session*, or consult Mr. Kingsbury.

460. MARINE ECOLOGY

Spring term. Credit three hours. Prerequisites, Biological Sciences 101-102 or 103-104 and chemistry and physics. Lectures, M W F 9:05. Mr. Barlow.

Introduction to biological oceanography: the sea as an environment; physical and chemical characteristics of marine habitats, relation to biogeography; organic production, biochemical cycles and distribution of non-conservative properties; relation of hydrography to fisheries and distribution of populations, oceanographic aspects of pollution problems.

461. OCEANOGRAPHY

Fall term. Credit three hours. Prerequisites, introductory chemistry and physics. Lectures, T Th 10:10. Laboratory, Th 12-12:50. Mr. Barlow.

Introduction to physical and chemical aspects of the oceans: geography and structure of ocean basins; origin and physical properties of seawater; distribution of salinity and temperature, heat and water budgets, formation of water masses; circulation, waves and tides; shore processes, formation and distribution of sediments; discussion of current problems in oceanography. Laboratory work in organization and analysis of oceanographic observations.

462. LIMNOLOGY

Spring term. Credit four hours. Prerequisites, Biological Sciences 361, organic chemistry, and one year of college physics or permission of instructors. Lecture, W F 11:15. Laboratory, F 1:25-4:25; S 8-11. Mr. Hall.

A study of processes and mechanisms in the biology, chemistry, and physics of inland waters taught from a functional and analytic point of view. Laboratories devoted to both field studies and experiments on model systems.

462A. LIMNOLOGY, LECTURES

Spring term. Credit two hours. Prerequisites, Biological Sciences 361, organic chemistry, and one year of college physics, or permission of instructors. Lecture, W F 11:15. Mr. Hall.

The lecture portion of Course 462.

463. PLANT ECOLOGY

Fall term. Credit four hours. Prerequisite, Biological Sciences 101-102 or

103-104 or equivalent. Lectures M W F 10:10. Laboratory and field trips W 2:30-4:25. Mr. Miller.

Principles of plant-environment interactions in relation to the distribution, structure, and functioning of plant communities. These principles will be illustrated by analyzing representative plant communities and their environments.

#### AQUATIC ENTOMOLOGY AND LIMNOLOGY

(Entomology 471)

#### 469. BIOLOGY OF FISHES

Fall term. Credit four hours. Prerequisite, Biological Sciences 101-102 or 103-104, or 270, or equivalent. Lecture, M W 9:05. Laboratory, M W or T Th 2-4:30. Mr. Raney.

An introduction to the study of fishes; their structure, classification, evolution, distribution, ecology, physiology, and behavior. Laboratory studies on structure, identification, classification, and nomenclature. Field studies of local species.

#### [470. ICHTHYOLOGY]

Not offered in 1967-68.

Spring term. Offered in odd-numbered years. Credit four hours. Prerequisites, Biological Sciences 469 or permission of the instructor. Mr. Raney.

#### 471. MAMMALOLOGY

Fall term. Credit four hours. Prerequisites, Biological Sciences 270 or equivalent work in vertebrate biology and permission of instructor. Lectures, T Th 10:10. Laboratory, F 2:30-4:25, and S 9:05-11:30.

Lectures on various aspects of mammalian biology, including evolution, distribution, systematics, ecology, behavior, and physiology. Laboratory and field work on the ecology, behavior, and life histories of local mammals; the taxonomy of recent mammals, with emphasis on the North American fauna; and special topics.

#### 472. ORNITHOLOGY

Spring term. Credit four hours. Prerequisites, Biological Sciences 270 or equivalent work in vertebrate biology and permission of instructor. Lectures, M W 11:15. Laboratory, S 8-12:35. Mr. Lancaster.

Lectures cover various aspects of the biology of birds, including anatomy, physiology, classification, evolution, migration and orientation, behavior, ecology, distribution, and adaptations. Laboratory will include studies of external and internal morphology, pterylosis, molts and plumages, skin identification of birds of New York and families of birds of the world. Several demonstration periods will emphasize hybridization, evolution, adaptive radiation, mimicry, and geographic variation.

#### 475. EVOLUTIONARY THEORY

Fall term. Credit four hours. Prerequisites, Biological Sciences 281 and one of the following courses: Biological Sciences 270, 371, 341, 343, or 344; or Entomology 212; or Plant Pathology 309; or consent of instructor. Lectures, T Th 11:15. Discussion, Th 12. Mr. Brown.

Lectures and class discussions on organic evolution, with primary emphasis on the mechanisms of speciation and adaptation.

#### 479. RESEARCH IN ECOLOGY, EVOLUTION, AND SYSTEMATICS

Either term. Credit and hours to be arranged. Staff.

## 68 GENETICS AND DEVELOPMENT

Practice in planning, conducting, and reporting independent laboratory and/or library research programs.

### 561-562. QUANTITATIVE ECOLOGY

Spring term. Credit four hours. Prerequisites, one year of biology and permission of the instructor. Organic chemistry and some college mathematics are desirable. Lectures, M W 11:15. Laboratory, 1:25-4:25. Mr. Cole.

A quantitative course on selected ecological topics for advanced undergraduates and graduate students. Topics include the origin and interpretation of habitat differences, toleration and response physiology, population dynamics, construction and uses of life tables, spatial distribution patterns, and approaches to the quantitative analysis of biotic communities.

### 563. ADVANCED PLANT ECOLOGY

Spring term. Credit four hours. Prerequisite, consent of instructor. One course each in ecology, plant physiology, and soils is strongly recommended. Lectures, M W F 10:10. Mr. Miller.

Lectures and seminars dealing with the physiological mechanisms and the physical, chemical, and biological processes which underlie ecosystem structure and function. Some major topics included will be responses to the environment by individual plants, populations, and species, and the cycling of energy, nutrients, and water in ecosystems.

### 565. SPECIAL TOPICS IN LIMNOLOGY

Fall term. Credit three hours. Prerequisite, consent of instructor. Hours to be arranged. Mr. Hall.

For description see the *Announcement of the Graduate School*.

### ADVANCED INSECT TAXONOMY

(Entomology 531, 532, 533, 534)

### ADVANCED PARASITOLOGY: PROTOZOA AND HELMINTHS

(Entomology 551)

### [571. SPECIAL TOPICS IN MAMMALOLOGY]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisites, Biological Sciences 471 or equivalent and permission of instructor. Enrollment limited. Lecture and discussion, T 10:10-12:05. Fernow 14. Laboratory and field work to be arranged.

### 661. SEMINAR IN POPULATION AND COMMUNITY ECOLOGY

Fall term. Credit one hour. Prerequisites, a course in ecology and permission of instructor. Lecture, M 7:30 p.m. Mr. Root.

Discussion of recent advances in population and community ecology. The topic for 1967 will be predation. Participants will present reports on the role of predators in regulating populations, biological control schemes, and the coevolution of predator and prey species.

## Genetics and Development

### 280. HUMAN GENETICS

Spring term. Credit three hours. Prerequisite, Biological Sciences 101-102 or 103-104. Students who have had Biological Sciences 281 may register only

with the permission of the instructor. Lectures, M W 10:10. Discussion, F 10:10.

An introduction to biological heredity through consideration of the genetics of man. Advances in the science of genetics are having a profound effect on man's understanding of himself and on his potential for influencing his present and future well-being. The course is intended primarily to contribute to the student's general education in these matters, and, although certain aspects of genetics will be considered with some rigor, the course is not designed to serve as a prerequisite to advanced courses in genetics.

#### 281. GENETICS

Fall or spring term. Credit four hours. Prerequisite, Biological Sciences 101-102 or 103-104. Students who have had Biological Sciences 280 may register only with the permission of the instructor. Lectures, M W F 8. Laboratory, M T W Th or F 2:30-4:25, or T Th S 8-9:55. Students do not preregister for laboratory sections; laboratory assignments will be made at the end of the first lecture period. Three preliminary examinations will be given each term at 7:30 in the evening. (Oct. 6, Nov. 17, Dec. 8; and Feb. 23, Apr. 12, May 3). Messrs. Stinson, Fink, MacIntyre, Russell, and assistants.

A general study of the fundamental principles of genetics. Discussions of gene transmission, gene action and interaction, gene linkage and recombination, gene structure, gene and chromosome mutations, genetic aspects of differentiation, genes in populations, breeding systems, extrachromosomal inheritance. Animals, plants and microorganisms are used in the laboratory, which also includes an independent study of inheritance in *Drosophila*.

#### CYTOLOGY

(Biological Sciences 347)

#### 385. ANIMAL EMBRYOLOGY

Fall term. Credit four hours. Prerequisite, Biological Sciences 281. Lectures, W F S 11:15. Laboratory, W 8-9:55 or 2:30-4:25; or F 2:30-4:25. Mr. Blackler.

General animal embryology with equal emphasis on the physiological, as well as the morphological basis of early development. Vertebrate development is treated on a comparative basis.

#### [CYTOGENETICS]

(Biological Sciences 440)

Not offered in 1967-68.

#### 480. POPULATION GENETICS

Spring term. Credit three hours. Prerequisites, Biological Sciences 281 or the equivalent, and permission of the instructor. Lectures, T Th 11:15. Mr. B. Wallace.

A study of factors which influence the genetic structure of Mendelian populations and which are involved in race formation and speciation.

#### [482. PHYSIOLOGICAL GENETICS]

Not offered in 1967-68.

Spring term. Credit three hours. Prerequisites, Biological Sciences 281 and a course in organic chemistry. Lectures, M W 8. Mr. Srb.

#### MICROBIAL GENETICS

(Biological Sciences 495)

**486. PLANT DEVELOPMENT**

Spring term. Credit one hour. Prerequisite, Biological Sciences 101-102 or 103-104. Not open to students who have taken Biological Sciences 444-446 or 541-542. Lectures, M W F 10:10 (for five weeks only). Messrs. Steward and Bierhorst.

Deals with problems of growth, development, and morphogenesis, with special reference to plants. There will be 15 lectures delivered in five weeks, constituting a portion of Biological Sciences 444-446 and 541-542. Students who specifically require a short course in plant development may register for Biological Sciences 486.

**489. RESEARCH IN GENETICS AND DEVELOPMENT**

Fall or spring term. Credit and hours to be arranged.

Practice in planning, conducting, and reporting independent laboratory and/or library research programs.

**584. EXPERIMENTAL EMBRYOLOGY**

Spring term. Credit three hours. Prerequisite, Biological Sciences 385. Lecture, T 11. Laboratory, T Th 2-4:25. Mr. Blackler.

An advanced course in animal development in which stress is laid on practical manipulations carried out by the students. Every student will have an opportunity to repeat for himself some of the classical and modern experiments and techniques.

**680. CURRENT TOPICS IN GENETICS**

Throughout the year. Credit two hours a term. Open to graduate students, with preference given to majors in the field of genetics. Undergraduates by permission only. No auditors. Enrollment limited to twenty students. Monday 10:10-12:05. Staff.

A seminar course with critical presentation and discussion by students of original research papers in a particular area of current interest. Content of the course and staff direction will vary from term to term, and will be announced a semester in advance.

## Microbiology

**290. GENERAL MICROBIOLOGY**

Either term. Credit five hours. Prerequisites, Biological Sciences 101-102 or 103-104 and Chemistry 104 or 108 or the equivalent. Lectures, M W F 11:15. Laboratory, M W 2-4:25; T Th 8-11 or 2-4:25. Fall, Mr. Seeley. Spring, Mr. VanDemark.

An introductory course; a study of the basic principles and relationships in the field of microbiology, with fundamentals necessary to further work in the subject.

The course offering in the spring term will provide special emphasis on the application of microbiology in home economics and agriculture.

**290A. GENERAL MICROBIOLOGY, LECTURES**

Either term. Credit three hours. Prerequisites, Biological Sciences 101-102 or 103-104 and Chemistry 104 or 108 or the equivalent. Lectures, M W F 11:15. Mr. Seeley (fall), Mr. VanDemark (spring).

The same as the lecture part of course 290. Will not serve alone as a prerequisite for advanced microbiology courses.



**290B. GENERAL MICROBIOLOGY, LABORATORY**

Either term. Credit two hours. Mr. Seeley (fall), Mr. VanDemark (spring).

The same as the laboratory part of Course 290. May be taken only by special permission of the instructor.

**390A. ADVANCED BACTERIOLOGY, LECTURE**

Fall term. Credit three hours. Prerequisites, organic chemistry, Biological Sciences 290 or permission of the instructor. Biochemistry (may be taken concurrently) is desirable. Lectures, T Th S 9:05. Mr. MacDonald.

A study of the comparative physiological and ecological relationships among bacteria and some related organisms. A number of groups of bacteria will be discussed in detail as well as factors which influence their ability to survive in nature. In addition, a number of lectures will be devoted to the history of bacteriology and to the theory and development of bacterial classification.

**390B. ADVANCED BACTERIOLOGY LABORATORY**

Fall term. Credit three hours. Coregistration in 390A and permission of the instructor. Hours to be arranged. Mr. MacDonald.

Techniques for the isolation, cultivation, and detailed study of selected groups of organisms. Some of the more standard techniques of physiological study will be introduced.

**393. APPLIED AND INDUSTRIAL MICROBIOLOGY**

Fall term. Credit three hours. Given in alternate years. Prerequisites, Biological Sciences 290 or the equivalent. Lectures, T Th S 11:15. Messrs. Delwiche, Seeley, VanDemark.

A survey of the microbiology of industrial fermentations, water, and waste decomposition.

**394. DAIRY AND FOOD MICROBIOLOGY**

Spring term. Credit four hours. Prerequisite, Biological Sciences 290. Lectures, M W 12:20. Laboratory, M W 2-4:25. Mr. Naylor.

The major families of microorganisms of importance in dairy and food science are studied systematically with emphasis on the role played by these organisms in food preservation, food fermentations, and public health. The laboratory work includes practice in the use of general and special methods for microbiological testing and control of dairy and food products as well as practice in the isolation and characterization of organisms found in foods.

**SOIL MICROBIOLOGY**

(Agronomy 306)

**PATHOGENIC BACTERIOLOGY**

(Veterinary Medicine 340)

**490A. MICROBIAL PHYSIOLOGY LECTURE**

Spring term. Credit three hours. Prerequisites, Microbiology 390 or permission of instructor. Lectures, T Th S 10:10. Primarily for microbiology majors intending to enter graduate school and for graduate students. Mrs. Gibson and staff.

A study of the organization of physiological processes in microorganisms, including a study of structure, energy-yielding mechanisms, macromolecular biosynthesis and of growth and regulation.

#### 490B. MICROBIAL PHYSIOLOGY LABORATORY

Spring term. Credit three hours. Prerequisites, a grade of B minus or better in Microbiology 390, coregistration in 490A, and permission of the instructor. Time to be arranged. Mrs. Gibson and Staff.

Experiments on material covered in Course 490 lectures will be used to introduce students to modern techniques used in physiological research, such as the use of radioisotopes, large-scale growth of microorganisms, and the isolation and characterization of specific cellular components.

#### 495. MICROBIAL GENETICS

Fall term. Credit four hours. Prerequisites, Biological Sciences 281 and 290 or permission of the instructor. For upperclassmen and graduate students. Lecture, W 7:30-9:25 p.m. Laboratory, T 1:25-4:25 and other hours to be arranged. Mr. Zahler.

Genetics of bacteria and their viruses, with emphasis on the mechanisms of genetic phenomena.

#### 495A. MICROBIAL GENETICS LECTURES

Fall term. Credit two hours. Prerequisites, Biological Sciences 281 and 290 or 290A. For upperclassmen and graduate students. Lecture, W 7:30-9:25 p.m. Mr. Zahler.

The course is the same as the lecture portion of Biological Sciences 495. S and U grading optional.

#### 496. CHEMISTRY OF MICROBIAL PROCESSES

Spring term. Credit two hours. Prerequisites, beginning courses in general microbiology, biochemistry, and organic chemistry. Intended for upperclassmen and graduate students. Lectures, M W 11:15. Mr. Delwiche.

Selected topics pertaining to the energy metabolism, oxidative and fermentative abilities, and biosynthetic capacities of microorganisms. When possible and appropriate the subject matter deals with the various microbial forms in a comparative sense.

#### 498. VIROLOGY

Spring term. Credit three hours. Given in alternate years. Prerequisites, Biological Sciences 290 and 281 and permission of the instructor. Lectures, T Th S 11:15. Mr. Naylor, assisted by Mr. Ross and Mr. Carmichael.

A study of the basic physical, chemical, and biological properties of plant, animal, and bacterial viruses.

#### 499. RESEARCH IN MICROBIOLOGY

Either term. Credit and hours to be arranged. Staff.

For advanced students of high academic standing. A program of research projects in various aspects of basic microbiology.

#### 590. METHODS IN ADVANCED BACTERIOLOGY

Spring term. Credit four hours. Given in alternate years. Prerequisite, permission of instructor. Limited enrollment. Hours to be arranged. Mr. MacDonald.

Primarily for graduate students. Intended to acquaint advanced students with some of the more important techniques used in the study of bacterial physiology. Emphasis will be placed on the use of radioisotopes; growth, structure, and function of cells.

**691. GRADUATE SEMINAR IN MICROBIOLOGY**

Fall and spring term. Credit one hour per term. T 4:45. Staff.

Required of all graduate students majoring in microbiology.

**699. MICROBIOLOGY SEMINAR**

Fall and spring terms. Without credit. Th 4:15. Staff.

Required of graduate students majoring in microbiology and open to all who are interested.

**ADVANCED SOIL MICROBIOLOGY**

(Agronomy 506)

**SEROLOGY**

(Veterinary Medicine 941)

**IMMUNOCHEMISTRY**

(Veterinary Medicine 944)

**ANIMAL VIROLOGY**

(Veterinary Medicine 945)

**CHEMISTRY**

Mr. R. A. Plane, Chairman; Messrs. A. C. Albrecht, S. H. Bauer, A. T. Blomquist, J. M. Burlitch, R. A. Caldwell, W. D. Cooke, R. C. Fay, M. E. Fisher, J. H. Freed, D. H. Geske, M. J. Goldstein, W. M. Gulick, G. G. Hammes, J. L. Hoard, R. Hoffmann, R. E. Hughes, E. Kostiner, J. E. Lind, F. A. Long, J. Meinwald, W. T. Miller, G. H. Morrison, H. Muxfeldt, R. F. Porter, H. A. Scheraga, Miss M. Seager, Messrs. M. F. Semmelhack, M. J. Sienko, G. W. Smith, D. A. Usher, B. Widom, C. F. Wilcox, J. J. Zuckerman.

A major in chemistry permits considerable flexibility in the detailed planning of a course program. The required courses can be completed in three years, leaving the senior year open for advanced and independent work in all areas of chemistry: physical, organic, inorganic, analytical, theoretical, bio-organic, biophysical. A major in chemistry can also provide the necessary basis for significant work in related areas such as molecular biology, chemical physics, geochemistry, chemical engineering, solid state physics, and medicine.

The courses are arranged as a progression with some courses (including mathematics and physics) prerequisite to those which are more advanced. During the first year the student should normally register for general chemistry (preferably Chemistry 115-116), mathematics, a Freshman Humanities course, and a foreign language or, in some instances, physics. Students who are not prepared to begin their programs with Chemistry 115-116 may choose an alternate sequence Chemistry 107-108, 236, or Chemistry 103-104, 205, 236, for general chemistry. In the second year the student should complete calculus, take physics, organic chemistry, begin physical chemistry and complete a course in Distribution. Physical chemistry would be completed in

the third year along with courses in advanced inorganic and analytical chemistry and in Distribution. Advanced work in chemistry and related subjects could be pursued in the fourth year. The opportunity for independent research is also available. All students with questions about details of a major program are encouraged to consult with the chairman of the Department of Chemistry or his representative. Entering students exceptionally well prepared in chemistry may receive advanced placement credit for Chemistry 107-108 and proceed to a more advanced program.

Prerequisites to admission to a major in chemistry are (1) Chemistry 115-116, or 107-108 and 236, or 103-104, 205 and 236; (2) Physics 207; and (3) Mathematics 111. A student is not encouraged to undertake a major in chemistry unless he has passed the above courses at a good level of proficiency. Students are encouraged to complete Chemistry 279 in their freshman and sophomore years.

For a major in chemistry the following courses must be completed: (1) Chemistry 355-356, 357-358, 279, 387-388, 339, and 410; (2) Mathematics 112, 213; (3) Physics 208; and (4) Russian 101 or 301-302, or preferably, German 101 or 301-302, unless two units of either language have been offered for entrance. Advanced courses in physics and mathematics are recommended as electives for students who intend to continue for an advanced degree in chemistry.

The major defined in the *Announcements of the College of Arts and Sciences* for 1964-65 and 1965-66 is applicable to the classes graduating 1967-69.

The Honors program in chemistry offers the superior student an opportunity to do independent study in seminars and gain experience in research during his senior year. It is particularly recommended to those who plan graduate work in chemistry. Completion of the program at a high level of performance leads to the degree of Bachelor of Arts with Honors in Chemistry. The requirements for admission to the Honors program are a cumulative average grade of at least B and permission of the Department. Prospective Candidates for Honors should discuss their plans with their advisers by March 1 of their junior year. Candidates for Honors must complete Chemistry 497 and 498.

The Distribution requirement in physical sciences is satisfied in chemistry by Chemistry 103-104, 107-108, or 115-116.

Students and members of the teaching staff are required to wear safety glasses or approved eye-protective devices in all chemistry laboratories.

General identification of the courses listed below is as follows:

Inorganic: 410, 411, 421, 505-506, 515, 516.

Analytical: 236, 339, 426, 433, 525, 527.

Organic: 353, 355, 356, 357-358, 456, 457, 461, 465-466, 565, 566, 570, 572, 574.

Physical and Theoretical: 276, 279, 285-286, 380, 387-388, 389-390, 474, 477, 481, 578, 580, 586, 589, 593, 594, 596, 598.

Bio-organic: 568, 572, 582.

Biophysical: 577, 586.

**103-104. INTRODUCTION TO CHEMISTRY**

Throughout the year. Credit three hours a term. Chemistry 103 is prerequisite to Chemistry 104. Recommended for students who have not had high school chemistry and for those desiring a less mathematical course than Chemistry 107-108. Lectures, M F 10:10 or 11:15. Laboratory, M W or F 1:25-4:25, W or S 8-11. Scheduled preliminary examinations may be held in the evenings. If passed with a grade of C, this course serves as a prerequisite for Chemistry 205 or Chemistry 353. Fall term, Mr. Sienko; spring term, Mr. Caldwell; and Assistants.

An introduction to chemistry with emphasis on the important principles and facts of inorganic and organic chemistry.

**107-108. GENERAL CHEMISTRY**

Throughout the year. Credit three hours fall term and four hours spring term. Prerequisite, high school chemistry; 107 is prerequisite to 108. Recommended for those students who will take further courses in chemistry.

*Division A:* Lectures, T Th 9:05 or 10:10. Laboratory, W F or S 8-11, T or Th 1:25-4:25. Scheduled preliminary examinations may be held in the evenings. In spring term, one additional recitation hour as arranged. Fall term, Mr. Freed; spring term, Mr. Plane; and Assistants.

*Division B:* Lectures, T Th 12:20 or 1:25. Laboratory, M W or F 1:25-4:25, T or Th 8-11. Scheduled preliminary examinations may be held in the evenings. In spring term, one additional recitation hour as arranged. Fall term, Mr. Fay; spring term, Mr. Zuckerman; and Assistants.

Lectures, laboratory, and recitation must be taken within the same division throughout the year.

The important chemical principles and facts are covered, with considerable attention given to the quantitative aspects and to the techniques that are important for further work in chemistry. Second-term laboratory includes a systematic study of qualitative analysis.

*Note:* Entering students exceptionally well prepared in chemistry may receive advanced credit for Chemistry 107-108 by demonstrating competence in the Advanced Placement Examination of the College Entrance Examination Board, or in advanced standing examination given at Ithaca on the Saturday before classes start in the fall.

**115-116. GENERAL CHEMISTRY AND INORGANIC QUALITATIVE ANALYSIS**

Throughout the year. Credit four hours a term. Prerequisite, high school chemistry and physics at a grade of 90 or higher; Chemistry 115 is prerequisite to Chemistry 116. Coregistration in a calculus course at the level of Mathematics 111 or 191 and/or high school calculus required. Recommended for students who intend to specialize in chemistry or in closely related fields. Enrollment limited to 120. Fall term: lectures, M W F 12:20; one laboratory period, T or Th 10:10-1:10, W or F 8-11, or W or F 1:25-4:25. Spring term: lectures, M W 12:20; two laboratory periods, T Th 10:10-1:10; W F 8-11; W F 1:25-4:25; M 8-11, Th 1:25-4:25; M T 1:25-4:25; or S 8:00-1:10. Fall term, Mr. Hoffmann; spring term, Mr. Burlitch; and Assistants.

An intensive, systematic study of the laws and concepts of chemistry, with considerable emphasis on mathematical aspects. Laboratory work will cover both qualitative and quantitative analysis.

**205. QUALITATIVE INORGANIC ANALYSIS AND IONIC EQUILIBRIUM**

Fall term. Credit four hours. Prerequisite, Chemistry 104 with a grade of C

or better. Lectures, M W 12:20. Laboratory, T Th 1:25-4:25 or T Th 8-11. Mr. Kostiner and Assistants.

Application of the theory of chemical equilibrium to the properties and reactions of the ions of selected elements and the separation and detection of these ions in solution.

### 236. INTRODUCTORY QUANTITATIVE ANALYSIS

Either term. Credit four hours. Prerequisite, Chemistry 205 or 108 or advanced placement in chemistry. Enrollment is limited. Students are encouraged to register for the fall term if possible. Lectures: T Th 12:20. Laboratory: fall term, M W or T Th 1:25-4:25; spring term, M W or T Th 1:25-4:25, or F 1:25-4:25 and S 8-11. Mr. Gulick and Assistants.

A study of the fundamental principles of quantitative chemistry. Laboratory experiments are designed to illustrate basic principles and practice of quantitative procedures.

### 279. PHYSICAL CHEMISTRY I

Spring term. Credit four hours. Prerequisites, Chemistry 108 or 116, Mathematics 213, and coregistration in Physics 208, or consent of the instructor. Chemistry 279 is the first course of a three-semester sequence (279, 387-388) required of chemistry majors in the Class of 1970 and thereafter. Lectures, M W F 10:10. Mr. Widom.

Fundamental concepts in atomic and molecular theory; the origins of quantum theory, atomic spectra, elementary wave mechanics, quantum chemistry, and molecular structure.

### 285-286. INTRODUCTORY PHYSICAL CHEMISTRY

Throughout the year. Credit five hours a term. Prerequisites, Chemistry 108 or 116, Mathematics 192, Physics 123, or consent of the instructor. For students in engineering; not open to Arts and Sciences students. Lectures, M W F 9:05. Laboratory lecture, F 12:20. Laboratories: fall term, M T or W Th 1:25-4:25, or F 1:25-4:25 and S 10:10-12:35; spring term, M T 1:25-4:25 or W Th 1:25-4:25. Mr. Lind and Assistants.

The lectures will give a systematic treatment of the fundamental principles of physical chemistry. The laboratory will deal with the experimental aspects of the subject and also develop the needed skills in quantitative chemical analysis.

### [339. ADVANCED ANALYTICAL CHEMISTRY]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite or parallel course, Chemistry 387. Required of candidates for the degree of A.B. with a major in chemistry. Lectures, M W F 9:05. Laboratory, one afternoon per week, to be arranged.

### 353. ELEMENTARY ORGANIC CHEMISTRY

Either term. Credit four hours. Prerequisite, Chemistry 104 at a grade of C- or better, or 108, or 116. Primarily for students in the premedical and biological curricula. Parallel registration in Chemistry 355 is recommended. Lectures, M W F S 11:15. Fall term, Mr. Blomquist. Spring term, instructor to be announced.

An integrated study of aliphatic and aromatic organic compounds, their occurrence, methods of preparation, reactions, and uses.

The student should determine the entrance requirements for the particular medical school he wishes to enter. Students may obtain six hours credit by taking Chemistry 353-355. An additional two hours credit in laboratory may be obtained by taking Chemistry 356.

**355. ELEMENTARY ORGANIC LABORATORY**

Either term. Credit two hours. Prerequisite or parallel, Chemistry 353 or 357. Enrollment is limited; registrants who do not appear at the first meeting of their section will forfeit their registration. Required of candidates for the degree of B.Ch.E. or A.B. with a major in chemistry. Discussion-laboratory, M W 1:25-4:25; T Th 8-11; T Th 1:25-4:25; F 1:25-4:25, S 8-11. Scheduled preliminary examinations may be held in the evenings. Mr. Smith and Assistants.

An introduction to various laboratory techniques for the separation, purification, and analysis of organic compounds as these are applied to problems of natural products, of reaction kinetics, and of organic synthesis.

**356. ELEMENTARY ORGANIC LABORATORY**

Spring term. Credit two hours. Prerequisite, Chemistry 353-355. Enrollment is limited; registrants who do not appear at the first meeting of their section will forfeit their registration. Required of candidates for the degree of B.Ch.E. or A.B. with a major in chemistry. Discussion-laboratory, M W 1:25-4:25; T Th 8-11; T Th 1:25-4:25; F 1:25-4:25, S 8-11. Scheduled preliminary examinations may be held in the evenings. Mr. Smith and Assistants.

A laboratory course designed to illustrate both classical and spectroscopic methods for determining the structures of organic compounds.

**357-358. INTRODUCTORY ORGANIC CHEMISTRY**

Throughout the year. Credit three hours a term. Prerequisite, Chemistry 108, or 116, or 205, or advanced placement in chemistry. Chemistry 357 is prerequisite to Chemistry 358. Parallel registration in Chemistry 355-356 is recommended. Required of candidates for the degree of B.Ch.E. and A.B. with a major in chemistry. Lectures, M W F 9:05. Mr. Miller.

A systematic study of the more important classes of carbon compounds, reactions of their functional groups, methods of synthesis, relations, and uses.

**380. CHEMICAL BONDING AND PROPERTIES OF ORGANIC MOLECULES**

Spring term. Credit three hours. Prerequisite, Chemistry 108, or 116, or 205, or Physics 443 or consent of the instructor. Lectures M W F 9:05. Mr. Hoffmann.

Primarily for students who have had no course in organic chemistry but a good background in physics.

**387-388. INTRODUCTORY PHYSICAL CHEMISTRY**

Throughout the year. Credit five hours a term. Prerequisites, Chemistry 236, Mathematics 213 or 221, Physics 208, or consent of the instructor. In 1968-69 and following years, Chemistry 279 will be prerequisite to Chemistry 387. Chemistry 387 is prerequisite for Chemistry 388. Required of candidates for the degree of A.B. with a major in chemistry. Lectures, M W F 10:10. Laboratory: fall term, T 1:25-4:25 or F 1:25-4:25; spring term, M T 1:25-4:25 or W F 1:25-4:25. Laboratory-lecture (fall term only), Th 12:20. Examinations, Th 7:30 p.m. Fall term, Messrs. Porter, Scheraga; spring term, Messrs. Bauer, Porter; and Assistants.

A study of the more fundamental principles of physical chemistry from the standpoint of the laws of thermodynamics and of the kinetic theory. The laboratory will consist of experiments illustrating laboratory techniques as well as experiments in classical and modern physical chemistry.

**389-390. INTRODUCTORY PHYSICAL CHEMISTRY**

Throughout the year. Credit four hours a term. Prerequisites, same as Chemistry 387 and 388, or consent of the instructor. Chemistry 389 is prerequisite to Chemistry 390. Lectures, M W F 10:10. Examinations, Th 7:30 p.m. Fall term, Mr. Scheraga; spring term, Mr. Bauer.

The lecture portion of Chemistry 387-388.

**410. INORGANIC CHEMISTRY**

Spring term. Credit four hours. Prerequisite, Chemistry 286 or 387 or consent of the instructor. Chemistry majors are advised to take this course in their junior year. Lectures, M W F 9:05. Mr. Kostiner.

Lectures and assigned readings with emphasis on the application of thermodynamic, kinetic, and structural considerations to inorganic systems.

**411. INORGANIC CHEMISTRY LABORATORY**

Fall term. Credit four hours. Prerequisite or parallel course, Chemistry 387, or consent of the instructor. Hours to be arranged. Mr. Zuckerman.

Laboratory experiments illustrating the techniques and scope of modern inorganic chemistry.

**421. INTRODUCTION TO INORGANIC RESEARCH**

Either term. Credit two or four hours. Prerequisites, Chemistry 387-388 or 285-286 at an average of B or better and consent of the instructor. Hours to be arranged. Messrs. Burlitch, Fay, Kostiner, Plane, Porter, Sienko, and Zuckerman.

Informal advanced laboratory and library work, planned individually in consultation with a staff member, involving the preparation and characterization of inorganic substances. A written report is required.

**426. INSTRUMENTAL ANALYSIS**

Spring term. Credit four hours. Prerequisite, Chemistry 285 or 387 or consent of the instructor. Enrollment is limited. Laboratory may be taken separately by graduate students. Lectures, T Th 10:10. Discussion period to be arranged. Laboratory, one afternoon a week, to be arranged. Mr. Gulick and Assistants.

A discussion of the broad aspects of modern analytical chemistry, including photometric, electrometric, nuclear and mass spectrometric methods.

**433. INTRODUCTION TO ANALYTICAL RESEARCH**

Either term. Credit two or four hours. Prerequisite, Chemistry 388 with an average of B- or better or consent of the instructor. Hours to be arranged. Messrs. Cooke, Geske, and Morrison.

Informal research in the field of analytical chemistry involving both laboratory and library work.

**456. IDENTIFICATION OF ORGANIC COMPOUNDS**

Spring term. Credit two hours. Prerequisite, Chemistry 358. Enrollment is limited; registrants who do not appear at the first meeting of their section will forfeit their registration. Discussion-laboratory, M W 1:25-4:25; T Th 8-11; T Th 1:25-4:25; or F 1:25-4:25 and S 8-11. Scheduled preliminary examinations may be held in the evenings.

A laboratory course designed to illustrate both classical and spectroscopic methods for determining the structures of organic compounds.

**[457. ADVANCED ORGANIC-ANALYTICAL LABORATORY]**

Not offered in 1967-68.



Spring term. Credit four hours. Primarily for seniors and graduate students in chemistry. Prerequisites, Chemistry 358 and Chemistry 426, or Chemistry 525, or consent of the instructor. Discussion. T Th 8. Laboratory, three of the following periods: T Th 8-11, M T W Th F 1:25-4:25, S 10:10-1:10.

#### 461. INTRODUCTION TO ORGANIC RESEARCH

Either term. Credit two to four hours. Prerequisites, 456 or 457 and consent of the instructor. Primarily for seniors and graduate students as preparation for advanced and independent work. Enrollment limited for undergraduates to those having a record of B- or better in prerequisite courses. Laboratory and weekly discussion meeting, hours to be arranged. Messrs. Blomquist, Caldwell, Goldstein, Meinwald, Miller, Muxfeldt, Semmelhack, Usher, and Wilcox.

#### 465-466. ORGANIC CHEMISTRY

Throughout the year. Credit four hours a term. Prerequisite, Chemistry 358. Chemistry 465 is prerequisite to 466. Primarily for juniors, seniors, and graduate students. Enrollment limited for undergraduates to those having a record of B- or better in previous courses in organic chemistry. Lectures, M W F 12:20. Discussion, to be arranged. Fall term, Mr. Wilcox; spring term, Mr. Muxfeldt.

Fall term: structural theory; resonance; methods of structure determination; conformational analysis and other aspects of stereo-chemistry; introduction to reaction mechanisms; synthesis and characteristic reactions of hydrocarbons. Spring term: synthesis and reactions of the principal classes of organic compounds, with an emphasis on newer developments; the application of mechanistic reasoning to synthetic problems; multi-step syntheses.

#### [474. PHYSICAL CHEMISTRY OF HIGH POLYMERS]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, Chemistry 286 or 388 or consent of instructor. Primarily for graduate students. Lectures, T Th 8, S 9.

#### 477. INTRODUCTION TO RESEARCH IN PHYSICAL CHEMISTRY

Credit two to four hours. Prerequisite, Chemistry 388 at an average of B- or better and consent of instructor. Hours to be arranged. Messrs. Albrecht, Bauer, Fisher, Freed, Hammes, Hoard, Hoffmann, Hughes, Lind, Long, Porter, Scheraga, and Widom.

Informal advanced laboratory and library work in physical chemistry, planned individually in consultation with a staff member.

#### 481. ADVANCED PHYSICAL CHEMISTRY

Fall term. Credit four hours. Prerequisite, Chemistry 286 or 388. Lecture, M W F 9:05. Discussion section to be arranged. Mr. Widom.

A discussion of advanced topics in physical chemistry, including an introduction to the principles of quantum theory and statistical mechanics, atomic and molecular spectra, and elementary valence theory.

#### 497-498. HONORS SEMINAR AND RESEARCH

Throughout the year. Credit four hours a term. Prerequisite, admission to the Honors program. Seminar, W 2:30. Laboratory hours to be arranged. Messrs. Hammes and Muxfeldt.

The seminar will be an informal presentation and discussion of selected topics in which all members participate. Individual research will be on

advanced problems in chemistry under the guidance of a staff member. A written report on the research results is required.

#### 505-506. ADVANCED INORGANIC CHEMISTRY

Throughout the year. Credit four hours a term. Prerequisite or parallel course, Chemistry 387-388 or 285-286, or consent of the instructor. Chemistry 505 is prerequisite to Chemistry 506. Open to juniors, seniors, and graduate students. Lectures, M W F 11:15. Fall term, instructor to be announced; spring term, Mr. Sienko.

For description see the *Announcement of the Graduate School*.

#### 515-516. SELECTED TOPICS IN ADVANCED INORGANIC CHEMISTRY

Throughout the year. Credit two hours a term. Students may register for either term separately. Prerequisite, Chemistry 388. Lectures, T Th 12:20. Messrs. Burlitch and Fay.

For description see the *Announcement of the Graduate School*.

#### 525. ADVANCED ANALYTICAL CHEMISTRY

Fall term. Credit four hours. Prerequisite, Chemistry 286 or 388. For graduate students only except by consent of the instructor. Lectures. M W F 8. Examinations, T 7:30 p.m. Mr. Cooke.

For description see the *Announcement of the Graduate School*.

#### 527. ADVANCED ANALYTICAL CHEMISTRY

Spring term. Credit four hours. Prerequisite, Chemistry 286 or 388. Primarily for graduate students. Lectures, M W F 8. Mr. Geske. Offered in alternate years.

An intensive examination of contemporary electroanalytical chemistry, electrode kinetics, voltammetry including polarography, coulometry, and chronopotentiometry. Study of chromatographic separation including gas chromatography. Analytical significance of non-aqueous solutions.

#### 565. PHYSICAL ORGANIC CHEMISTRY

Fall term. Credit four hours. Prerequisite, Chemistry 465-466 or consent of the instructor. Primarily for graduate students. Lectures, T Th S 12:20. Mr. Caldwell.

For description see the *Announcement of the Graduate School*.

#### 566. PHYSICAL ORGANIC CHEMISTRY

Spring term. Credit three hours. Prerequisite, Chemistry 565 or consent of the instructor. Primarily for graduate students. Lectures, T Th 12:20. Mr. Wilcox.

Quantitative aspects of organic chemistry.

#### 568. CHEMICAL ASPECTS OF BIOLOGICAL PROCESSES

Fall term. Credit four hours. Prerequisites, Chemistry 358 and 388, or their equivalents. Primarily for graduate students. Lectures, T Th S 8. Mr. Usher.

Bioenergetics, metabolic pathways, origin of life. This course forms the chemical basis for the graduate program in molecular biology.

#### [570. SELECTED TOPICS IN ORGANIC CHEMISTRY]

Not offered in 1967-68.

Fall term. Credit three hours. Prerequisites, 465-466 or consent of instructor. Primarily for graduate students.

**572. ORGANIC MECHANISMS AND ENZYME CATALYSIS**

Spring term. Credit four hours. Prerequisites, Chemistry 357-358 or equivalent, and a course in general biochemistry. Primarily for graduate students in chemistry and biochemistry. Lectures, M W F 11:15. Messrs. Hammes and Usher.

Model systems, functional groups, coenzymes; enzymes, kinetics, mechanism.

**[574. CHEMISTRY OF NATURAL PRODUCTS]**

Not offered in 1967-68.

Spring term. Credit three hours. Prerequisites, Chemistry 456 or 457, and 465-466. Primarily for graduate students. Lectures, T Th 12:20 and discussion period, M 4:30.

**[577. CHEMISTRY OF NUCLEIC ACIDS]**

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisites, Chemistry 358 and 388, or their equivalents. Primarily for graduate students. Lectures, T Th S 8.

**578. THERMODYNAMICS**

Spring term. Credit four hours. Prerequisite, 286 or 388. Primarily for graduate students. Lectures, T Th S 9:05, and a discussion period to be arranged. Mr. Hoard.

For description see the *Announcement of the Graduate School*.

**580. KINETICS OF CHEMICAL REACTIONS**

Fall term. Credit four hours. Prerequisites, Chemistry 481 and 578, or consent of the instructor. Lectures, M W F 9:05. Mr. Hammes.

For description see the *Announcement of the Graduate School*.

**582. SPECIAL TOPICS IN MOLECULAR BIOLOGY**

Spring term. Credit four hours. Prerequisite, Chemistry 568 or consent of the instructor. Primarily for graduate students. Topics to be announced. Lectures, T Th S 11:15.

For description see the *Announcement of the Graduate School*.

**586. PHYSICAL CHEMISTRY OF PROTEINS**

Spring term. Credit four hours. Prerequisite, Chemistry 286 or 388. Primarily for graduate students. Lectures, M W F 8 and S 10:10; occasional lectures, W 7:30 p.m. Mr. Scheraga.

Chemical constitution, molecular weight, and structural basis of proteins; thermodynamic, hydrodynamic, optical, and electrical properties; protein and enzyme reactions; statistical mechanics of helix-coil transition in biopolymers; conformation of biopolymers.

**589. X-RAY CRYSTALLOGRAPHY**

Fall term. Credit four hours. Prerequisite, Physics 322 or consent of the instructor. M W F 12:20. Offered in alternate years; will not be offered in 1968-69. Mr. Hoard.

Space groups, reciprocal lattices, three-dimensional diffraction, interpretation of X-ray diffraction data, structure determination by Fourier synthesis.

**593. QUANTUM MECHANICS I**

Fall term. Credit four hours. Prerequisites, Chemistry 279 and Physics 303 (or coregistration in Physics 319) or their equivalents, and coregistration in

## 82 CHEMISTRY

Mathematics 421 (or equivalent), or consent of the instructor. Lectures, T Th 8:30-9:50. Mr. Fisher.

Schrödinger's equation, wave packets, uncertainty principle, WKB theory. Matrix mechanics, orbital and spin angular momentum, exclusion principle, perturbation theory, variational principle, Born-Oppenheimer approximation. At the level of Bohm, *Quantum Theory*.

### 594. QUANTUM MECHANICS II

Spring term. Credit four hours. Prerequisite, Chemistry 593 or its equivalent. Lectures, M W F 11:15. Mr. Freed.

Time-dependent phenomena in quantum mechanics and interaction with radiation. Group theory and applications. Topics in molecular quantum mechanics. At the level of Tinkham, *Group Theory and Quantum Mechanics*.

### 596. STATISTICAL MECHANICS

Spring term. Credit four hours. Prerequisite, Chemistry 593 or equivalent is desirable but not required. Primarily for graduate students. Lectures, T Th 8:30-9:50. Mr. Fisher.

Ensembles and partition functions. Thermodynamic properties of ideal gases and crystals. Third law of thermodynamics, equilibrium constants, vapor pressures, imperfect gases, and virial coefficients. Distribution and correlation functions. Lattice statistics and phase transitions. Bose-Einstein and Fermi-Dirac ideal gases. Maxwell theory of viscosity and heat conduction. At the level of T. L. Hill, *Statistical Thermodynamics*.

### 598. SELECTED TOPICS IN PHYSICAL CHEMISTRY

Either term. Credit two or four hours.

Detailed consideration is given to special topics selected from the field of theoretical and experimental physical chemistry. Topics are varied from year to year.

### 600. GENERAL CHEMISTRY SEMINAR

Throughout the year. No credit. Th 4:40. A series of talks representative of all fields of current research interest in chemistry, given by advanced graduate students, research associates, faculty members, and distinguished visitors.

### 601-602. INTRODUCTORY GRADUATE SEMINAR IN ANALYTICAL, INORGANIC, AND PHYSICAL CHEMISTRY

Throughout the year. No credit. Hours to be arranged. Required of all first-year graduate students majoring in analytical, inorganic, physical, and theoretical chemistry, and molecular biology. Mr. Zuckerman.

Weekly seminars on contemporary topics prepared and presented by first-year graduate students. Attention given to details of selecting, preparing, and presenting a given topic. Group preparation and participation emphasized.

### 650-651. GRADUATE SEMINAR IN ORGANIC CHEMISTRY

Throughout the year. No credit. Open to qualified juniors, seniors, and graduate students. Required of all graduate students majoring in organic chemistry. M 8:15 p.m. Mr. Usher.

### 700. BAKER LECTURES

T Th 11:15. Fall term: V. Prelog, Technische Hochschule, Zurich. Spring term: G. Herzberg, National Research Council, Ottawa, Canada.

## THE CLASSICS

Mr. G. M. Kirkwood, Chairman; Messrs. J. Hutton, G. Messing, Miss Elizabeth Milburn, Messrs. P. Pucci, N. Robertson, E. W. Spofford, F. O. Waage.

Those whose major study is in the Classics must complete 24 hours of advanced courses in Greek and Latin (Greek courses numbered above 201 or Latin courses numbered above 202) and 15 hours, selected after conference with the adviser, in related subjects. Related subjects for this purpose are all courses listed below under Classical Civilization, also ancient philosophy, and selected courses in comparative literature, linguistics, modern foreign languages and literatures, and Semitic studies.

Students whose major study is in the Classics with an emphasis on Latin must include in their programs before graduation Latin 205-206, 315-316, and 317-318. By arranging courses early with the School of Education, they may meet the requirements for the N.Y. State certificate for high school teaching.

Those whose major study is in Classical Civilization must complete (a) 18 hours in Latin or Greek; (b) Comparative Literature 313-314 and 12 hours selected from the courses listed below under Classical Civilization; and (c) 12 hours in related subjects. Related subjects for this purpose may be any courses in the humanities but selected in conference with the adviser so as to form a coherent and significant experience in the relation between antiquity and subsequent periods in the Western tradition; they may include courses listed under Classical Civilization which have not been used to satisfy requirement (b).

Candidates for the degree of Bachelor of Arts with Honors in Classics or Bachelor of Arts with Honors in Classical Civilization must fulfill the requirements of the appropriate major study, as prescribed in the foregoing paragraphs, and must also complete successfully the special Honors courses 370, 371, and 372. Part of the credit for Honors courses may be included in the hours required for the major study. Students who wish to become candidates for Honors and who have a cumulative average of B- or better should consult some member of the Department before preregistering for the second term of the junior year.

The Distribution requirement in the Humanities is satisfied in Classics by any two courses in Greek beginning with 201 or in Latin beginning with 202 that form a reasonable sequence; but no course may be used for this requirement if it has been used for the language requirement.

## Greek

### 101. GREEK FOR BEGINNERS

Either term. Credit three hours. M W F 12:20. Fall term, Mr. Kirkwood. Spring term, Mr. Spofford.

Introduction to Attic Greek. Designed to enable the student to read the ancient authors as soon as possible.

103. ATTIC GREEK

Either term. Credit three hours. Prerequisite, Greek 101. M W F 12:20. Fall term, Mr. Robertson. Spring term, instructor to be announced.

Continuation of Greek 101, and readings in Plato or Xenophon.

201. ATTIC AUTHORS: PLATO, APOLOGY; EURIPIDES, MEDEA

Fall term. Credit three hours. Prerequisite, Greek 103. T Th S 9:05.

Attention is given both to the exact understanding of the Greek texts and to relevant broad literary and historical questions.

203. HOMER

Either term. Credit three hours. Prerequisite, Greek 201. Fall term M W F 12:20. Miss Milburn. Spring term T Th S 9:05. Mr. Robertson.

Readings in Homeric epic, study of Homeric dialect, and consideration of such literary problems as the authorship, unity, and style of the epics and their relation to oral and literary epic.

209-210. GREEK COMPOSITION

Throughout the year. Credit one hour a term. Prerequisite, Greek 103 or the equivalent. W 2:30.

An exercise course, meeting once a week, to provide review and further study of the forms and, more especially, the syntax of ancient Greek. Recommended as a companion course to Greek 201 and 203.

301. HERODOTUS AND SOPHOCLES

Fall term. Credit four hours. Prerequisite, Greek 203. T Th S 10:10. Mr. Pucci.

302. THUCYDIDES AND THE GREEK ORATORS

Spring term. Credit four hours. Prerequisite, Greek 203. M W F 12:20. Mr. Kirkwood.

305. AESCHYLUS, ARISTOPHANES, LYRIC POETS

Fall term. Credit four hours. Prerequisite, Greek 302. T Th S 9:05. Mr. Pucci.

306. PHILOSOPHICAL WRITERS

Spring term. Credit four hours. Prerequisite, Greek 302. T Th S 10:10.

309-310. ADVANCED GREEK COMPOSITION

Throughout the year. Credit one hour a term. Prerequisite, Greek 209-210 or the equivalent. T 2:30.

401-402. INDEPENDENT STUDY

[407. GRADUATE READING COURSE]

Not offered in 1967-68.

Fall term. Credit four hours.

408. GREEK EPIC: HOMER AND HESIOD

Spring term. Credit four hours. Primarily for graduate students. M W F 11:15. Mr. Robertson.

571-572. SEMINAR

Throughout the year. Credit four hours a term. For graduate students. Th 3:35-5:30. Fall term, Mr. Kirkwood. Spring term, Mr. Pucci.

Fall term: Pindar. Spring term: Euripides.

## Latin

Final placement in freshman Latin courses, other than beginning Latin, is determined by an examination administered by the Department of Classics approximately a week after the beginning of the fall term. Tentative placement is made on the basis of the previous training listed below as prerequisite for each course and of College Board Achievement Test scores.

### 105-106. LATIN FOR BEGINNERS

Throughout the year. Credit three hours a term. T Th S 11:15.

An introductory course in the essentials of the Latin language, designed for rapid progress toward reading the principal Latin authors. Readings in the second term from Caesar and short selections from various prose authors.

### 107. FRESHMAN COURSE: SELECTIONS FROM VIRGIL AND CICERO

Fall term. Credit three hours. Prerequisite, Latin 106 or two units of entrance Latin. T Th S 9:05, 10:10.

Begins with a comprehensive but rapid review of the fundamentals of Latin, but is principally a reading course. An oration of Cicero and selections from the *Aeneid*.

### 108. FRESHMAN COURSE: SALLUST AND TACITUS

Spring term. Credit three hours. Prerequisite, Latin 107 or three units of entrance Latin. M W F 11:15, T Th S 9:05.

Tacitus' *Agricola* or *Germania*; readings from Sallust's *Catiline* or *Jugurtha*.

### 201. CATULLUS, CICERO, HORACE

Fall term. Credit three hours. Prerequisite, Latin 108 or three or (preferably) more units of entrance Latin. M W F 9:05, 11:15. Mr. Spofford and another member of the faculty.

Primarily intended for freshmen, and constituting, with 202, an introduction to Latin literature in its greatest epoch, at the end of the Republic and the beginning of the Empire. Reading consists of selections from the lyric poetry of Catullus and Horace, and either letters or an essay of Cicero.

### 202. THE AUGUSTAN AGE

Spring term. Credit three hours. Prerequisite, Latin 201. M W F 9:05, 11:15. Miss Milburn and Mr. Spofford.

Selections from Suetonius' *The Deified Augustus*, Ovid's *Ars Amatoria* or *Metamorphoses*, and Virgil's *Eclogues*.

### 205. ROMAN COMEDY

Fall term. Credit three hours. Prerequisite, Latin 202 or the equivalent; open to freshmen by departmental placement examination or by Advanced Placement Examination. M W F 10:10. Mr. Messing.

Plautus and Terence; at least one comedy of each playwright.

### 206. VIRGIL AND LIVY

Spring term. Credit three hours. Prerequisite, Latin 205. M W F 10:10.

A book, or selections, of Livy's history of Rome; readings in Virgil's *Georgics*.

### 221-222. LATIN COMPOSITION

Throughout the year. Credit one hour a term. Prerequisite, Latin 202 or special permission. F 2:30.

An exercise course, meeting once a week, to provide review and further study of the forms and, more especially, the syntax of Latin. Recommended as a companion course to Latin 205-206.

[315. LUCRETIUS' *DE RERUM NATURA* AND CICERO'S PHILOSOPHICAL WORKS]

Not offered in 1967. Will be offered in 1968.

Fall term. Credit four hours. Prerequisite Latin 206.

[316. VIRGIL'S *AENEID*]

Not offered in 1967. Will be offered in 1968.

Spring term. Credit four hours. Prerequisite Latin 315 or the equivalent.

317. TACITUS AND SENECA

Fall term. Credit four hours. Prerequisite, Latin 206. M W F 11:15.

318. ELEGIAC POETS, PETRONIUS, APULEIUS

Spring term. Credit four hours. Prerequisite, Latin 206. M W F 11:15. Mr. Spofford.

321-322. LATIN COMPOSITION: ADVANCED COURSE

Throughout the year. Credit one hour a term. For undergraduates who have completed Latin 221-222 and for graduate students. F 2:30. Mr. Messing.

[369. MEDIEVAL LATIN LITERATURE]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, three years of high school Latin or the equivalent.

415. SILVER AGE LITERATURE

Fall term. Credit four hours. Prerequisite, two terms of Latin at the 300 level. M W F 9:05.

Selections from Juvenal, Martial, Pliny the Younger, Quintilian.

416. THE WORKS OF HORACE

Spring term. Credit four hours. Prerequisite, two terms of Latin at the 300 level. Mr. Pucci.

451-452. INDEPENDENT STUDY

For qualified majors.

581-582. SEMINAR

Throughout the year. Credit four hours a term. For graduate students. Fall term, M 3:35-5:30. Mr. Hutton. Spring term, instructor to be announced.

Fall term, Virgil.

## Honors Courses

370. HONORS COURSE

Spring term. Credit four hours. To be taken in the junior year.

A program of readings and conferences centered in an author or a topic chosen in accordance with the special interests of the students and instructor.



**371. HONORS COURSE**

Fall term. Credit four hours. To be taken in the senior year.

Continuation of 370, with change of author or topic.

**372. HONORS COURSE: SENIOR ESSAY**

Spring term. Credit four hours. For students who have successfully completed course 371. Topics must be approved by the Honors adviser at the end of the first term of the senior year.

## Classical Linguistics

**421-422. HISTORICAL GRAMMAR OF GREEK AND LATIN**

Throughout the year. Credit four hours a term. Hours to be arranged. Mr. Messing.

Fall term: phonology. Spring term: morphology and syntax. The linguistic analysis of Greek and Latin sounds and forms and their historical development. The course will thus offer the student an insight into the methods of comparative linguistics as applied to Greek and Latin.

## Classical Civilization

**119. FRESHMAN SEMINAR IN GREEK LITERATURE**

Fall term. Credit three hours. Mr. Spofford.

For description see Freshman Humanities Program, page 22.

**120. FRESHMAN SEMINAR IN LATIN LITERATURE**

Spring term. Credit three hours.

For description see Freshman Humanities Program, page 22.

**220. INTRODUCTION TO CLASSICAL ARCHAEOLOGY**

Spring term. Credit three hours. M W F 9:05. Miss Milburn.

Survey of the history of classical archaeology; study of select ancient Greek sites with emphasis upon archaeological aims, methods, contributions, and problems.

**319. PRECLASSICAL GREECE**

Fall term. Credit four hours. T Th S 11. Miss Milburn.

Aegean archaeology from the Neolithic period to the eighth century B.C.

**320. ARCHAEOLOGY OF CLASSICAL GREECE**

Spring term. Credit four hours. T Th S 11. Miss Milburn.

Study of select monuments of ancient Greece from the eighth century to the Hellenistic period.

**GREEK SCULPTURE**

(History of Art 321)

**ARCHAEOLOGY**

(History of Art 421 and 423)

**ENGLISH TRANSLATIONS OF GREEK AND LATIN CLASSICS**

(Comparative Literature 313-314)

FOUNDATIONS OF WESTERN THOUGHT

(Comparative Literature 323)

HUMANISM AND THE RENAISSANCE

(Comparative Literature 332)

GREEK AND ROMAN DRAMA

(Comparative Literature 404)

ANCIENT HISTORY

(History 301-302)

GREEK HISTORY

(History 432)

THE HELLENISTIC AGE

(History 434)

ORIGINS OF WESTERN POLITICAL THOUGHT

(Government 462)

## COMPARATIVE LITERATURE

Mr. B. E. Pike, Chairman; Messrs. M. H. Abrams, B. B. Adams, R. M. Adams, H. D. Albright, G. P. Biasin, E. A. Blackall, H. Caplan, A. Caputi, Miss Patricia Carden, Mr. M. A. Carlson, Miss Alice Colby, Messrs. D. Connor, H. Dieckmann, J. M. Echols, S. B. Elledge, J. A. Finch, H. J. Frey, G. Gibian, P. A. Gottschalk, D. I. Grossvogel, M. Horwitz, J. Hutton, R. E. Kaske, G. M. Kirkwood, J. W. Marchand, E. P. Morris, A. Muschg, I. Rabinowitz, K.-L. Selig, H. Shadick, W. D. Shaw, E. W. Spofford, A. L. Udovitch, W. Wetherbee III.

The Department of Comparative Literature offers no major program; certain of its courses may, however, be counted toward the major requirements of other departments, at their option. For information consult the English, Classics, French, Russian, and German sections in this Announcement. Distribution requirements in the Humanities may be satisfied by any of the 200 or 300 courses in literature which form a sequence.

Related courses: consult the offerings in Classics, English, German, Romance Studies, Russian, Semitic Studies, Asian Studies, History, Philosophy, the Fine Arts, Music, and Speech and Drama.

### 101-102. FRESHMAN SEMINAR IN WESTERN LITERATURE

Credit three hours a term. Mr. Levy and others.

For description see Freshman Humanities Program, page 26.

### 103-104. FRESHMAN SEMINAR IN GERMAN LITERATURE

Credit three hours a term. Mr. Connor, Mr. Muschg, and Staff.

For description see Freshman Humanities Program, page 26.

## FRESHMAN SEMINAR IN GREEK LITERATURE

(Classics 119)

Fall term. Credit three hours. Mr. Spofford.

For description see Freshman Humanities Program, page 22.

## FRESHMAN SEMINAR IN LATIN LITERATURE

(Classics 120)

Spring term. Credit three hours.

For description see Freshman Humanities Program, page 22.

## 201-202. WESTERN LITERATURE

Throughout the year. Credit three hours a term. May not be taken by students who have had 101-102. Each section limited to 20 students. M W F 9:05, 10:10, 11:15, 12:20. T Th S 9:05, 10:10, 11:15. Mrs. Herz and others.

Study and discussion in small sections of selected great books of the Western tradition. Fall term: the *Iliad*, and *Aeneid*, selections from the Bible, *The Divine Comedy*, *Paradise Lost*, and *Faust*. Spring term: Greek tragedies, *Don Quixote*, *King Lear*, plays by Molière, *Madame Bovary*, *Notes from the Underground*, stories by Kafka, and *The Stranger*.

## 207-208. RUSSIAN LITERATURE

Throughout the year. Credit three hours a term. M W F 12:20. Miss Carden.

Readings in English translation. Fall term: Russian legends, chronicles, studies, and works by Griboedov, Pushkin, Gogol, Leskov, Aksakov, and Turgenev. Spring term: Dostoevsky, Tolstoy, Saltykov, Chekhov, Babel, and Sholokhov.

## 301. THE LITERATURE OF THE OLD TESTAMENT

Fall term. Credit four hours. M W F 9:05. Mr. Rabinowitz.

Readings, in translation, from books of the Old Testament composed during the pre-exilic period of Israel's history (to c. 520 B.C.). The various genres of classical Hebrew literature, and the ancient Israelite ideas and institutions essential to comprehension of the texts will be studied.

## 302. THE LITERATURE OF POST-EXILIC ISRAEL

Spring term. Credit four hours. For sophomores, juniors, and seniors. M W F 9:05. Mr. Rabinowitz.

Readings, in translation, from the later books of the Old Testament, the apocryphal literature, and the Qumran (Dead Sea) Scrolls. An introduction to the thought of the culture which produced both normative Judaism and early Christianity.

## [303. THE LITERATURE OF THE NEW TESTAMENT]

Not offered in 1967-68.

Fall term. Credit four hours. T Th S 9:05.

## 313-314. ENGLISH TRANSLATIONS OF GREEK AND LATIN CLASSICS

Throughout the year. Credit four hours a term. First term prerequisite to the second. For juniors and seniors only. Course 313, T or Th 2:30-4:25 and an hour to be arranged. Course 314, T 2:30-4:25 and an hour to be arranged. Mr. Hutton.

Rapid reading in the best translations with emphasis upon Greek masterpieces, for example, the *Iliad* and the *Odyssey*, the tragedies of Sophocles, and

## 90 COMPARATIVE LITERATURE

several dialogues of Plato. Translations from the Latin will be chosen for the bearing of the original works upon modern literature.

### 323. FOUNDATIONS OF WESTERN THOUGHT: GREEK RELIGIOUS THOUGHT

Fall term. Credit four hours. For sophomores and juniors and seniors. T Th S 11:15. Mr. Robertson.

A survey of the historical development of religious attitudes and beliefs which have been influential or persuasive in Western life down to modern times; emphasis is on the social circumstances predisposing men to personal forms of religion. The interchange between popular impulses and speculative contributions will be traced through a selection of Greek writings in translation.

### 327-328. MEDIEVAL LITERATURE

Throughout the year. Credit four hours a term. M W F 12:20. Fall term, Mr. Hill. Spring term, instructor to be announced.

Fall term: analysis and interpretation of great medieval literary works in translation. Though readings will vary somewhat from year to year, a typical program would be *Beowulf*; *Chanson de Roland*; *Njassaga*; a romance of Chrétien: Wolfram's *Parzival*; Gottfried's *Tristan*, and/or *Sir Gawain and the Green Knight*; *Pearl*; *Piers Plowman*. Spring term: To be announced.

### 332. HUMANISM AND THE RENAISSANCE

Spring term. Credit four hours. M W F 10:10. Mr. Hutton.

Readings in translation from Petrarch, Erasmus, Ariosto, Rabelais, Tasso, Montaigne, and others, designed to bring out typical ideas and attitudes of the Renaissance period. Attention will be given to such topics as fifteenth-century humanism, neo-Latin literature, Ciceronianism, Renaissance Platonism, theories of poetry, the influence of the Counter-Reformation.

### 337-338. THE LITERATURE OF EUROPE

Throughout the year. Credit four hours a term. First term or consent of the instructor prerequisite to the second. T Th S 10:10. Fall term, Mr. Wetherbee. Spring term, Mr. Gottschalk.

Fall term: reading of such representative authors as Chaucer, Boccaccio, Malory, Erasmus, Castiglione, Machiavelli, Rabelais, Montaigne, Shakespeare, and Donne. Spring term: reading of such representative authors as Pope, Rousseau, Byron, Stendhal, Dostoevsky, Verlaine, Nietzsche, Ibsen, Shaw, and Babel.

### 345-346. WORLD DRAMA

Throughout the year. Credit four hours a term. Students with specialized interest in drama or the theater should elect this course, preferably as early as the sophomore year. M W F 10:10. Fall term, Mr. Carlson. Spring term, Mr. Carlson.

An introduction to representative types and forms of drama as interpreted in the theater; designed to increase appreciation of the drama as literature and of the theater as an art form and social institution. Fall term: readings from the drama of Greece, Rome, the Middle Ages, Classic India and Japan, Renaissance Italy, Spain, England, and France. Spring term: readings in the drama since Goethe, including such authors as Schiller, Hugo, Ibsen, Strindberg, Pirandello, Chekov, Lorca, O'Neill, Williams, Brecht, and Beckett.

## 351-352. THE MODERN EUROPEAN NOVEL

Throughout the year. Credit four hours a term. M W F 12:20. Fall term, instructor to be announced. Spring term, Mr. Frederick.

Readings by such authors as Richardson, Sterne, Austen, Balzac, Stendhal, Goethe, Flaubert, Dostoevsky, Tolstoy, Proust, Kafka, and Mann.

## [354. DON QUIXOTE]

Not offered in 1967-68.

Spring term. Credit four hours. M W F 2:30. Mr. Selig.

## 358. IDEA AND FORM IN TWENTIETH CENTURY EUROPEAN LITERATURE

Spring term. Credit four hours. Enrollment limited to 50 students. T Th S 10:10. Mr. Pike.

An experimental examination of the modern consciousness of literature. Readings will include Gertrude Stein, *Three Lives*; Rilke, *Malte Laurids Brigge*; Gide, *The Counterfeiters*; Sartre, *Nausea*; Musil, *Five Women*; and stories by Borges, Flannery O'Connor, and others.

## 367. THE RUSSIAN NOVEL

Fall term. Credit four hours. T Th S 9:05. Mr. Gibian.

Works by Turgenev, Dostoevsky, and Tolstoy.

## 368. SOVIET LITERATURE

Spring term. Credit four hours. M W F 10:10. Mr. Horwitz.

An introduction to selected works of Russian literature, from 1917 to date, examined as social and historical documents and as works of art.

## [371. CHINESE HISTORICAL AND PHILOSOPHICAL LITERATURE IN TRANSLATION]

Not offered in 1967-68.

Fall term. Credit three hours. M W F 10:10. Mr. Shadick.

## [372. CHINESE IMAGINATIVE LITERATURE IN TRANSLATION]

Not offered in 1967-68.

Fall term. Credit three hours. M W F 10:10. Mr. Shadick.

## [380. SOUTHEAST ASIAN LITERATURE IN TRANSLATION]

Not offered in 1967-68.

Fall term. Credit four hours. T 2:30-4:25. Mr. Echols.

## [402. THE ENLIGHTENMENT IN GERMANY, FRANCE AND ENGLAND]

Not offered in 1967-68.

Spring term. Credit four hours. Mr. Dieckmann.

## 404. GREEK AND ROMAN DRAMA

Spring term. Credit four hours. T Th S 10:10. Mr. Kirkwood.

A study, by lecture and discussion, of the evolution of forms and meanings in ancient tragedy and comedy as exemplified by the works of Aeschylus, Sophocles, Euripides, Aristophanes, Menander, Plautus, Terence, and Seneca. Representative plays are read in translation. Consideration is given also to the origins of tragedy and comedy, and to the ancient theater.

## 92 COMPARATIVE LITERATURE

### 409. POST-SYMBOLIST POETRY

Fall term. Credit four hours. M W F 10:10. Mr. Frey.  
Hopkins and Rilke.

### 411. MODERN GERMAN LITERATURE

Spring term. Credit four hours. M W F 11:15. Mr. Pike.

An intensive study of major works of Rilke, Mann, and Kafka, to be read in English translation.

### 414. MODERN ITALIAN LITERATURE

Spring term. Credit four hours. M 2:30-4:25. Mr. Biasin.

A thematic study of such authors as Verga, Svevo, Pirandello, Tomasi di Lampedusa, Basani, Pavese, and Moravia. Readings, lectures, and discussion in English.

### 416. MYTH AND LITERATURE

Spring term. Credit four hours. Enrollment limited to juniors, seniors, and graduate students. T Th S 12:20. Mrs. Siegel.

An examination of the meaning assigned to myth by imaginative writers of the nineteenth and twentieth century. Readings in mythography, literature, and criticism.

### 441. MODERN DRAMATISTS

Fall term. Credit four hours. No prerequisite but one of the following is recommended: Comparative Literature 345 or 346, or English 346. M W F 10. Mr. Carlson.

Intensive study of one or two major modern dramatists. Topic for 1967-68: the major plays of Ibsen and Strindberg.

### PROBLEMS IN THE RENAISSANCE

(English 404)

Spring term. Credit four hours. M W F 9:05. Mr. Robert Adams.

### LITERARY SOURCES IN THE ITALIAN RENAISSANCE

(History of Art 446)

Spring term. Credit four hours. Mr. Selig.

### 501-502. TOPICS IN COMPARATIVE LITERATURE

Throughout the year. Credit four hours a term. Primarily for graduate students in comparative literature. Hours to be arranged.

Topic to be announced.

### [506. STUDIES IN RENAISSANCE MYTHOGRAPHY]

Not offered in 1967-68.

Spring term. Credit four hours. Permission of instructor required. Mr. Selig.

### STUDIES IN RENAISSANCE LITERATURE

(English 515)

Fall term. Credit four hours. Mr. Robert Adams.

### 520. EIGHTEENTH-CENTURY AESTHETICS

Spring term. Credit four hours. T 2:30-4:25. Mr. Dieckmann.

Topic to be announced.

## 526. EUROPEAN ROMANTICISM

Spring term. Credit four hours. Mr. Frey.

Novalis, Leopardi, Keats.

## TWENTIETH-CENTURY GERMAN LITERATURE

(German 527)

Fall term. Credit four hours. T 2:30-4:25. Mr. Pike.

## COMPUTER SCIENCE

COLLEGES OF ARTS AND SCIENCES AND  
ENGINEERING

Mr. J. Hartmanis, Chairman; Messrs. K. M. Brown, R. W. Conway, P. C. Fischer, C. Pottle, G. Salton, R. J. Walker.

Computer science is a relatively new field of study that draws on and contributes to a number of existing disciplines — among others, mathematics, engineering, linguistics, and psychology. Developments in computer science are also used to make important contributions to research, development, design, and management activities in the various functional areas of engineering and applied science.

At Cornell, computer science is concerned with fundamental knowledge in automata, computability, and language structure, as well as with subjects such as numerical analysis and information processing which underlie broad areas of computer applications. Because of the wide implications of research in the field, the Department of Computer Science is organized as an intercollege department in the College of Arts and Sciences and the College of Engineering.

There is as yet no formal undergraduate major in this department. The student who is interested in the mathematical aspects of computer science can major in mathematics and choose mathematics Option I or Option II, including Computer Science 421-422 (Numerical Analysis), and then select fifteen hours of computer science courses including 401.

## 201. SURVEY OF COMPUTER SCIENCE

Spring term. Credit three hours. M W F 8:00.

Introduction to the structure and use of the modern digital computer. Intended to be a non-mathematical treatment of the material, with emphasis on non-numeric computer applications such as information retrieval, language processing, and artificial intelligence. A limited introduction to programming in a problem-oriented language is included.

## 311. INTRODUCTION TO COMPUTER PROGRAMMING

Either term. Credit two hours. T Th 11:15, W 2:30-4:25.

Notations for describing algorithms, analysis of computational problems. Application of programming language (FORTRAN IV, PL/I) to solve simple numerical and non-numerical problems using a digital computer.

## 385. AUTOMATA

Spring term. Credit three hours. Prerequisite, Mathematics 222 or 294 or equivalent. M W F 10:10. Mr. Fischer.

## 94 COMPUTER SCIENCE

The capabilities, limitations, and structures of finite automata, Turing machines and other abstract computing devices will be studied. Applications to questions of undecidability and artificial intelligence.

### 401. COMPUTER ORGANIZATION AND PROGRAMMING

Either term. Credit four hours. Prerequisite, Mathematics 221 or 293 or equivalent. Not open to students with credit for Engineering 9481 or 9381. T Th 11:15, W 2:30-4:25.

Characteristics and structure of digital computers. Programming in assembly and higher-order languages. Representation of data, index registers and indirect addressing, program organization, macro operations, recursive procedures, interpretive routines, auxiliary storage and input-output, operating systems.

### 411. INFORMATION AND COMPUTER STRUCTURES

Fall term. Credit four hours. Prerequisite, 401 or equivalent. T Th 9:05, W 2:30. Mr. Salton.

Fundamentals of computer organization and the representation of structured operands in computers. Information flow during instruction execution; addressing structures, symbol table techniques. Algorithms for the manipulation of arrays, trees, strings, lists. Programming language structure; recognition and analysis systems. Time-sharing computer organization, paging, segmenting and core management.

### 412. COMPUTER LANGUAGES AND COMPILERS

Spring term. Credit four hours. Prerequisite, 411 or consent of instructor. M W F 1:25.

Concerned with the theory and techniques of programming languages and systems for large-scale digital computer systems. Topics include comparison of structure and form of assemblers, interpreters, compilers, and list processors; formal definition of algorithmic languages and techniques used in compilation. Students will design and implement several simple languages during the term.

### 413. SYSTEMS PROGRAMMING

Fall term. Credit four hours. Prerequisite, 412 or consent of instructor. M W F 1:25.

Brief review of batch process programming systems, their components, operating characteristics, user services, and limitations. Implementation techniques for parallel processing of I/O and interrupt handling. Over-all structure of multiprogramming systems on large-scale multiprocessor hardware configuration. Details on addressing techniques, core management, file system design and management, system accounting, and other user-related services. Command languages and the embedding of subsystems. Operating characteristics (parameters) of large-scale systems.

### [417. ADVANCED INFORMATION PROCESSING]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, 401 or equivalent experience. T Th 9:05, W 2:30.

### 420. COMPUTER APPLICATIONS OF NUMERICAL ANALYSIS

Fall term. Credit four hours. Prerequisites, Mathematics 222 or 294 and Computer Science 311 or equivalent programming experience. M W F 9:05. Mr. Brown.



Modern computational algorithms for the numerical solution of a variety of applied mathematics problems are presented, and students solve current representative problems by programming each of these algorithms to be run on the computer. Topics include numerical algorithms for the solution of linear systems; finding determinants, inverses, eigenvalues and eigenvectors of matrices; solution of a single polynomial or transcendental equation in one unknown; solution of systems of non-linear equations; acceleration of convergence; Lagrangian interpolation and least squares approximation for functions given by a discrete data set; differentiation and integration; solution of ordinary differential equations: initial value problems for systems of non-linear first order differential equations, two-point boundary value problems; partial differential equations: finite difference grid technique for the solution of the Poisson equation.

#### 421-422. NUMERICAL ANALYSIS

Throughout the year. Credit four hours a term. Prerequisite, Mathematics 412 or 416 or 422. M W F 9:05. Mr. Walker, Mr. Brown.

A mathematically rigorous treatment of numerical analysis. Covers the topics of Computer Science 420 in a more complete fashion with emphasis on careful analytical derivation of algorithms, proofs of convergence and error analysis. Includes some computer programming projects.

#### 435. INFORMATION ORGANIZATION AND RETRIEVAL

Spring term. Credit four hours. Prerequisite, 401 or equivalent. T Th 9:05, occasionally W 2:30. Mr. Salton.

Covers all aspects of automatic language processing on digital computers, with emphasis on applications to information retrieval. Analysis of information content by statistical, syntactic, and logical methods. Dictionary techniques. Automatic retrieval systems, question-answering systems. Evaluation of retrieval effectiveness.

#### [441. HEURISTIC PROGRAMMING]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisites, Computer Science 401 and 411.

Comparison of heuristic and algorithmic methods. Justification of the need for heuristic approach and discussion of the objectives of work in artificial intelligence and in simulation of cognitive behavior. Discussion of research projects using heuristic programming techniques.

#### 485. THEORY OF AUTOMATA I

Fall term. Credit four hours. Prerequisite, Computer Science 401, Mathematics 481 or consent of instructor. M W F 11:15. Mr. Hartmanis.

Automata theory is the study of abstract computing devices; their classification, structure, and computational power. Topics include finite state automata, regular expressions, decomposition of finite automata and their realization, Turing machines and their computational power.

#### 486. THEORY OF AUTOMATA II

Spring term. Credit four hours. Prerequisite, 485 or consent of instructor. M W F 11:15. Mr. Hartmanis.

Topics include context-free and context-sensitive languages and their relation to push-down and linearly-bounded automata. Quantitative aspects of Turing machine computations: time- and memory-bounded computations with applications to language processing and classification of other automata and computations.

[487. FORMAL LANGUAGES]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite 401.

488. THEORY OF EFFECTIVE COMPUTABILITY

Spring term. Credit four hours. Prerequisite, Computer Science 401 or 485 or Mathematics 481, or consent of instructor. T Th 10:10.

Turing machines and Church's Thesis, universal Turing machines, unsolvability of the halting problem. Recursively enumerable sets, productive and creative sets, relative computability, the recursion theorem. Post's problem. Computational complexity hierarchies.

[521. NUMERICAL ANALYSIS OF LINEAR AND NON-LINEAR SYSTEMS OF EQUATIONS]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisites, Mathematics 521 and Computer Science 422. M W F 9:05. Mr. Brown.

Topics include recent methods for the solution of linear systems and eigenvalue, eigenvector determination; global convergence theorems for nonlinear systems, Newton-Kontorovich theory and its variations; function minimization.

523. NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS AND INTEGRAL EQUATIONS

Fall term. Credit four hours. Prerequisites, Mathematics 427 and Computer Science 422. M W F 2:30.

Topics include solution of nth-order, non-linear, initial value problems and boundary value problems; single step methods; predictor-corrector techniques; stability, accuracy, and precision of methods; eigenvalue problems; solution of integral equations having constant or variable limits: finite difference and iterative methods; singular and nonlinear integral equations.

525. NUMERICAL SOLUTION OF PARTIAL DIFFERENTIAL EQUATIONS

Spring term. Credit four hours. Prerequisites, Mathematics 428 and 521, and Computer Science 523. M W F 2:30.

General classification; solution by method of characteristics; finite-difference methods for hyperbolic and elliptic equations; parabolic equations in two dimensions; direct solution of elliptic finite-difference equations; iterative methods for the solution of elliptic equations; block methods for large systems; singularities in elliptic equations; stability in relation to initial value problems and non-linear discretization algorithms.

527. NUMERICAL METHODS IN APPROXIMATION THEORY

Spring term. Credit four hours. Prerequisites, Mathematics 521 and Computer Science 422. M W F 9:05. Mr. Walker.

$L_p$  norms; least-square approximation and orthogonal functions; Tchebycheff, asymptotic, rational, and continued-fraction approximations; the quotient-difference algorithm; methods of descent and ascent.

587. COMPUTATIONAL COMPLEXITY

Fall term. Credit four hours. Prerequisite, Computer Science 486 or 488 or consent of instructor. M W F 11:15. Mr. Fischer.

General measures of computational complexity and methods of classifying computable (recursive) functions. Examples of topics include restricted Turing

machines, real-time computation, elementary functions, primitive recursive hierarchies.

#### 590. SPECIAL INVESTIGATIONS IN COMPUTER SCIENCE

Throughout the year. Credit and sessions to be arranged.

Offered to qualified students individually or in small groups. Directed study of special problems in the field of computer science. (Register only with the registration officer of the department.)

#### 591. COMPUTER SCIENCE GRADUATE SEMINAR

Throughout the year. Credit one hour. For graduate students interested in computer science. Th 4:30-6:00. Staff, visitors and students.

A weekly meeting for the discussion and study of important topics in the field.

#### [621. SEMINAR IN NUMERICAL ANALYSIS]

Not offered in 1967-68.

One term. Credit four hours. Prerequisite, consent of instructor.

#### [681. SEMINAR IN AUTOMATA THEORY]

Not offered in 1967-68.

One term. Credit four hours. Prerequisite, consent of instructor.

#### DATA PROCESSING SYSTEMS

(Given as Business & Public Administration 901)

Spring term. Credit three hours. M W F 8.

#### ADVANCED DATA PROCESSING SYSTEMS

(Industrial Engineering 9582)

Fall term. Credit three hours. Prerequisite, Computer Science 401 or BPA 901 or consent of instructor.

#### DIGITAL SYSTEMS SIMULATION

(Industrial Engineering 9580)

Fall term. Credit three hours. Prerequisite, Computer Science 401 and a course in probability.

#### SWITCHING SYSTEMS I

(Electrical Engineering 4587)

Fall term. Credit three hours. Prerequisite, Electrical Engineering 4322 or consent of instructor.

Switching algebra; switching devices; logical formulation and realization of combinational switching circuits; minimization aids; number representation and codes; simple memory devices; synchronous sequential circuits; counters; shift registers, and arithmetic units in a digital computer.

#### SWITCHING SYSTEMS II

(Electrical Engineering 4588)

Spring term. Credit three hours. Prerequisite, Electrical Engineering 4587 or equivalent.

Synchronous and asynchronous sequential circuits, formulation and optimization; large-scale memory units, selection and control; further discussion of arithmetic units; integrated study of switching systems including general-purpose digital computer, control switching, and communication switching; introduction to the general theory of learning machines.

## ECONOMICS

Mr. F. H. Golay, Chairman; Messrs. G. P. Adams, Jr., M. G. Clark, T. E. Davis, M. G. de Chazeau, D. F. Dowd, W. D. Evans, J. C. H. Fei, H. Fleisig, W. Galenson, G. H. Hildebrand, J. G. B. Hutchins, R. W. Jones, A. E. Kahn, R. W. Kilpatrick, T. C. Liu, W. F. Long, M. O. McPhelin, C. Morse, R. T. Selden, T. Sowell, G. J. Staller, B. P. Stigum, J. Vanek, G. M. von Furstenberg, L. R. Webb.

Students wishing to major in economics must have completed both Economics 103 and Economics 104, or their equivalents, and, moreover, must have averaged at least C in these courses. Students who have completed only Economics 103 may be provisionally accepted as majors, but only if they have obtained a grade of B— or better. Freshmen intending to major in economics are advised to begin the course sequence, Economics 103–104, no later than their second term in residence. The Distribution requirements should be completed by the end of the sophomore year. Prospective majors are advised to consider as possible electives Principles of Accounting (Business and Public Administration 110S), Introductory Statistics (Agricultural Economics 314) and courses in calculus. These courses will contribute materially to preparation for advanced work in economics. Students proposing to major in economics should report to the secretary of the Department of Economics with a transcript of courses.

To complete the major, 28 hours of economics courses in addition to Economics 103–104 must be completed, including Economics 311 and 312. Industrial and Labor Relations 445 and Business and Public Administration 375, 575, and 576 may be included. In addition, majors in economics are expected to complete a minimum of three advanced courses in subjects related to economics, selected with the approval of their major advisers, from the offerings in American Studies, Anthropology, Asian Studies, Government, History, Mathematics, Philosophy, (Social) Psychology, and Sociology. Prospective majors should therefore anticipate any prerequisites these advanced courses may require, and complete them in their freshman and sophomore years. Programs of related subjects should complement programs of courses in economics, and both must be arranged in consultation with advisers.

Candidates for the degree of Bachelor of Arts with Honors in Economics will enroll in the Honors seminar. Honors candidates are expected to complete 32 hours of advanced courses in economics, including the Honors seminar, and all courses required of majors.

Students seeking admission to the Honors seminar should consult their advisers not later than November 1 of their junior year. Application will not normally be considered from students whose cumulative average is less than B— in both their general studies and their courses in economics.

A comprehensive Honors examination, both written and oral, will be given to Honors candidates at the end of their senior year. Honors candidates may be exempted from final examinations in their other courses in economics at the end of their senior year.

The Distribution requirement in Social Sciences is satisfied in economics by Economics 103-104.

## I. Introductory

### 103. MODERN ECONOMIC SOCIETY

Either term. Credit three hours. Large lectures, plus two additional discussion sections (scheduled throughout the week). Fall term: M W 9:05, 11:15, T Th 11:15. Messrs. Adams, Golay, Selden, and Assistants. Spring term: T Th 10:10. Mr. McPhelin and Assistants.

A survey of the existing economic order, with particular emphasis on the salient characteristics of the modern American economy. Concentration is on explaining and evaluating the operation of the price system as it regulates production, distribution, and consumption, and as it is in turn modified and influenced by private organization and government policy.

### 104. MODERN ECONOMIC SOCIETY

Either term. Credit three hours. Large lectures, plus two additional discussion sections (scheduled throughout the week). Fall term: T Th 9:05. Mr. Dowd and Assistants. Spring term: M W 9:05, T Th 9:05, 11:15. Messrs. Fei, Galenson, Kahn, and Assistants. Honors sections, hours to be arranged. Messrs. Sowell and others.

Economics 104, a continuation of 103, centers on the determinants of aggregate economic activity. The main areas studied are the monetary and banking systems, the composition and fluctuations of national income, and the major conditions of economic growth, all as influenced by monetary, fiscal, and other policies.

## II. Economic History

### 321. ECONOMIC HISTORY OF ANCIENT AND MEDIEVAL EUROPE

Fall term. Credit four hours. Open to upperclassmen with some background in economics or history, or with consent of the instructor. M W F 10:10. Mr. Dowd.

An examination and analysis of significant processes and relationships in the economic development of Europe in the ancient and medieval periods. Attention will be given to reciprocal relationships between the social and political context and the behavior of the economy over time.

### 322. ECONOMIC HISTORY OF MODERN EUROPE

Spring term. Credit four hours. Prerequisite, same as for 321. M W F 10:10. Mr. Dowd.

The period covered is from the close of the Middle Ages to the present.

### 323. AMERICAN ECONOMIC HISTORY

Fall term. Credit four hours. Prerequisites, Economics 103-104, or consent of the instructor. T Th S 10:10. Mr. Fleisig.

The course will concentrate on three lines of investigation: the use of economic and statistical analysis as an aid in answering historical questions, the use of historical experience in determining the validity of aspects of economic theory, and the extent to which historical economic experience is useful in resolving current economic problems. Problems selected from the period 1800-1939 will be discussed.

[324. AMERICAN ECONOMIC HISTORY]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisites, same as for 323. T Th S 10:10. Mr. Fleisig. Continuation of 323.

325. ECONOMIC HISTORY OF LATIN AMERICA

Fall term. Credit four hours. Open to upperclassmen with some background in economics or history, or with consent of the instructor. M W F 10:10. Mr. Davis.

A survey, emphasizing the processes and problems of economic growth and the evolution of economic institutions.

ECONOMIC AND BUSINESS HISTORY

(Business and Public Administration 375)

Fall term. Credit three hours. Limited to seniors who have completed Economics 103-104. M W F 9:05. Mr. Hutchins.

A study of the evolution of economic organization and of the role of the business firm therein. Although some attention is given to earlier times, the primary emphasis is on the period since 1750. The analysis of the development of business organization, administration, and policy proceeds in part by means of historical case studies. Attention is paid to the relations between business policies and the rise and fall of firms and industries, and to the interactions of business and public policies. The primary focus is on the United States, but European origins and developments are included when significant.

See also Economics 521-522, 523-524, 621-622, 623-624.

### III. Contemporary Economic Institutions, Practices and Problems

#### A. MONEY, BANKING, AND PUBLIC FINANCE

331. THE ECONOMICS OF MONEY AND CREDIT

Spring term. Credit four hours. Prerequisite, Economics 103-104. M W F 10:10. Mr. Selden.

A systematic treatment of the determinants of the money supply and the volume of credit. Economic analysis of credit markets and financial institutions in the United States.

335. PUBLIC FINANCE: RESOURCE ALLOCATION

Fall term. Credit four hours. Prerequisite, Economics 103-104. T Th S 9:05. Mr. Kilpatrick.

An analysis of the role of government in allocating resources through taxes and expenditures. Criteria for evaluation will be developed and applied to specific policies. Attention will focus on the federal government.

338. MACROECONOMIC POLICY

Spring term. Credit four hours. Prerequisite, Economics 312. T Th S 9:05. Mr. Kilpatrick.

A study of the use of fiscal and monetary policies for achieving economic stability and growth.

See also Economics 512, 612, 615, 631-632, 635-636.

## B. LABOR ECONOMICS

### ECONOMICS OF WAGES AND EMPLOYMENT

(Industrial and Labor Relations 241)

Spring term. Credit three hours. Prerequisite, Economics 103-104. Mr. Hildebrand and others.

An introduction to the characteristics of the labor market and to analysis of wage and employment problems. Among topics studied are the composition of the labor force, job-seeking and employment practices, methods of wage determination, theories of wages and employment, economic effects of unions, the nature and causes of unemployment, and programs to combat joblessness and poverty.

### 442. ECONOMICS AND PROBLEMS OF LABOR

Fall term. Credit four hours. Prerequisite, Economics 103-104. I&LR 241 recommended. M W F 11:15. Mr. Hildebrand.

An advanced course concerning the institutional organization of labor markets, economic analysis of their operation, and major policy questions involved. Principal topics include wage and employment theory; determinants of wage level and structure; technological change; unemployment; poverty and income distribution; inflation and incomes policy.

See also Economics 311, 511, 611, 413, 641-642.

## C. ORGANIZATION, PERFORMANCE, AND CONTROL OF INDUSTRY

### 351. PRIVATE ENTERPRISE AND PUBLIC POLICY

Fall term. Credit four hours. Prerequisite, Economics 103-104. M W F 9:05. Mr. Long.

The approach to public policy in a private enterprise system in the light of the economist's concepts of competition and monopoly. Economic bases for delineating the public and private sectors and the public regulatory function. An analysis and appraisal of the prevalence and effectiveness of competition in the American economy, with particular emphasis on the business organization, the price, production, and marketing policies, and the economic performance of a range of industries characterized by varying degrees of market concentration and governmental intervention.

### 352. PUBLIC REGULATION OF BUSINESS

Spring term. Credit four hours. Prerequisite, Economics 351 or consent of the instructor. M W F 9:05. Mr. Long.

A continuation of Economics 351, concentrating mainly on public policies of enforcing, supplementing, or replacing competition, with specific studies of selected industries and recent legal cases.

### TRANSPORTATION: RATES AND REGULATIONS

(Business and Public Administration 575)

Fall term. Credit three hours. Limited to seniors who have taken Economics 103-104 or the equivalent. M W F 10:10. Mr. Hutchins.

A study of American transportation focused on economic organization, public policy, and the rate-making process. The emphasis is on the theory and practice of rate making in an environment complicated by fixed, joint,

and common costs, by competition among differing modes of transport, and by complex patterns of regulation.

#### TRANSPORTATION: ORGANIZATION, ADMINISTRATION, AND PUBLIC POLICIES

(Business and Public Administration 576)

Spring term. Credit three hours. Limited to seniors who have completed Economics 103-104. M W F 10:10. Mr. Hutchins.

A continuation of B&PA 575 dealing with problems of organization, administration, and public policy in the various segments of transportation: merchant shipping, air transport, motor carrier transport, domestic water transport, and railroad reorganization. Cases are used to bring out some of the problems.

See also B&PA 375, Economics 341, 312, 521-522, 523, 621-622, 631-632, 651-652.

### D. INTERNATIONAL AND COMPARATIVE ECONOMICS

#### 361. INTERNATIONAL TRADE THEORY AND POLICY

Fall term. Credit four hours. Prerequisite, Economics 103-104 or consent of the instructor. M W F 11:15. Mr. von Furstenberg.

Survey of the principles that have served as guides in the formulation of international trade and commercial policies. The evolution of the theory of international trade, principles and practices of commercial policy, problems of regional integration and customs unions, and institutions and practices of state trading will be emphasized.

#### 362. INTERNATIONAL MONETARY THEORY AND POLICY

Spring term. Credit four hours. Prerequisite, Economics 103-104 or consent of the instructor. M W F 11:15. Mr. von Furstenberg.

Survey of the principles that have served as guides in the formulation of international financial policies. The evolution of the theory of balance of payments adjustment, international monetary standards, the nature of conflicts arising out of the relationship between domestic economic policies and external economic relations, international capital movements, economic aid, international monetary institutions, and proposals for international monetary reforms will be emphasized.

#### 364. THE UNITED STATES IN THE WORLD ECONOMY

Spring term. Credit four hours. Prerequisites, Economics 103-104 or consent of the instructor. M W F 9:05. Mr. Golay.

Analysis of international economic problems confronting the United States. Emphasis is given to interaction of domestic goals and policies and external economic equilibrium. Analysis of the United States balance of payments and examination of the commercial, foreign investment, economic aid, European economic integration, and commodity stabilization policies of this country.

#### [367. COMPARATIVE ECONOMIC SYSTEMS: SOVIET UNION AND EUROPE]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisites, Economics 103-104 and I&LR 445 or consent of the instructor. M W F 11:15. Mr. Staller.



**369. INTRODUCTION TO THE ECONOMY OF CHINA**

Fall term. Credit four hours. Prerequisite, consent of the instructor. T Th S 9:05. Mr. Chen.

A survey of modern Chinese economic development with special emphasis on the policies, performance, and problems of the mainland economy since 1949.

**COMPARATIVE ECONOMIC SYSTEMS: SOVIET RUSSIA**  
(Industrial and Labor Relations 445)

Spring term. Credit four hours. Prerequisite, Economics 103-104 or consent of the instructor. T Th 2-3:30. Mr. Clark.

A comparative analysis of the principles, structure, and performance of the economy of Soviet Russia. Special attention will be devoted to industry and labor, and to the international impact of Soviet economic development.

See also Economics 321-322, 325, 521-522, 561, 565, 571-572, 621-622, 624, 661-662, 671-672, 675, 676, 678.

**E. ECONOMIC GROWTH AND DEVELOPMENT****371. PUBLIC POLICY AND ECONOMIC DEVELOPMENT**

Fall term. Credit four hours. Prerequisite, Economics 103-104 or consent of the instructor. M W F 9:05. Mr. Golay.

Study of the role of the state in initiating and maintaining accelerated economic growth in less developed countries. Problems of capital accumulation, agricultural development, management of monetary and external disequilibria, interaction of culture change and economic growth, outside participation in economic modernization, and the role of international specialization are emphasized.

**372. PROCESSES OF ECONOMIC GROWTH AND DEVELOPMENT**

Spring term. Credit four hours. Prerequisite, Economics 103-104 or consent of the instructor. Non-majors and students who have not completed the prerequisite should see Interdepartmental 372. T Th S 10:10. Mr. Morse and guest lecturers.

A consideration of various contributions by economists and others to an understanding of how societies undergo economic growth and institutional change. Developing countries are the main focus of attention, most detailed consideration being given to Africa. Some possibilities of combining elements from economics and other fields to form a broad approach to economic development are explored.

See also Economics 321-322, 323, 325, 361-362, 367, 561-562, 565, 571-572, 661-662, 671-672, 675, 676, 678, 679, and I&LR 445.

**IV. Economic Theory****311. INTERMEDIATE MICROECONOMIC THEORY**

Either term. Credit four hours. Required of all students majoring in economics. Prerequisite, Economics 103-104. Fall term: M W F 9:05, M W F 10:10, M W F 1:25, T Th S 11:15. Messrs. Chen, McPhelin, Sowell, Stigum. Spring term: M W F 11:15. Mr. Long.

Analysis of the pricing processes in a private enterprise economy under varying competitive conditions, their role in the allocation of resources, and the functional distribution of national income.

### 312. INTERMEDIATE MACROECONOMIC ANALYSIS

Either term. Credit four hours. Required of all students majoring in economics. Prerequisite, Economics 103-104 or consent of the instructor. Fall term: T Th S 9:05. Mr. Kilpatrick. Spring term: M W F 9:05, M W F 11:15, T Th S 10:10, T Th S 11:15. Messrs. Chen, Fleisig, and others.

An introduction to the theory of national income determination and economic growth in alternative models of the national economy; the interaction and relation of aspects of these models to empirical aggregate economic analysis.

### 315-316. HISTORY OF ECONOMIC THOUGHT

Throughout the year. Credit four hours a term. With the consent of the instructor the first term need not be prerequisite to the second. Fall term: M F 2:30-4:00. Spring term: M F 2:30-4:00. Mr. Sowell.

A survey of the development of economic ideas from the early modern period to the twentieth century. Extensive readings from the Mercantilists, Smith, Ricardo, Mill, and Marshall, with class discussion of these. Supplementary readings from other men and schools will provide material for reports and term papers.

### [413. DISSENTING ECONOMIC DOCTRINES AND PROTEST MOVEMENTS]

Not offered in 1967-68.

Fall term. Credit four hours. M W F 10:10. Mr. Sowell.

### 417. INTRODUCTION TO MATHEMATICAL ECONOMICS

Fall term. Credit four hours. Prerequisite, Economics 311 and consent of the instructor. M W 1:25-2:40. Mr. Evans.

Application of elementary mathematical techniques to economic analysis.

## V. Honors

### 390. HONORS SEMINAR

Spring term. Credit three hours. Required of all juniors who plan to be candidates for Honors. Hours to be arranged. Mr. Adams.

Readings in books which have been significant in the development of economics.

### 391-392. HONORS SEMINAR

Throughout the year. Credit three hours in fall, six hours in spring. Required of all seniors who are candidates for Honors. Hours to be arranged. Messrs. Hildebrand and Adams and Staff.

Continuation of Economics 390, together with the writing of an Honors thesis and preparation for the comprehensive Honors examinations.

### 399. READINGS IN ECONOMICS

Either term. Credit two hours each term. Any member of the Department.

## Graduate Courses and Seminars

### 511. PRICE AND ALLOCATION THEORY

Either term. Credit four hours. Prerequisite, consent of the instructor. Fall term: T Th 1:25-2:40. Mr. Webb. Spring term: M W F 11:15. Mr. Hildebrand.

For description see the *Announcement of the Graduate School*.

### 512. MACROECONOMIC THEORY

Either term. Fall term: T Th S 9:05. Mr. Webb. Spring term: M W F 10:10. Mr. Selden.

For description see the *Announcement of the Graduate School*.

### 521-522. EUROPEAN ECONOMIC HISTORY

Throughout the year. Credit four hours a term. Hours to be arranged. Mr. Dowd.

### 523. AMERICAN ECONOMIC HISTORY

Fall term. Credit four hours. Hours to be arranged. Mr. Fleisig.

### 561-562. INTERNATIONAL ECONOMIC THEORY AND POLICY

Throughout the year. Credit four hours a term. Hours to be arranged. Mr. von Furstenberg.

### [565. ECONOMIC PROBLEMS OF LATIN AMERICA]

Not offered in 1967-68.

### 571-572. ECONOMIC GROWTH AND DEVELOPMENT

Throughout the year. Credit four hours a term. Hours to be arranged. Messrs. Golay and Morse.

### 611. ADVANCED MICROECONOMIC THEORY

Fall term. Mr. Fei.

### 612. ADVANCED MACROECONOMIC THEORY

Spring term.

### 613-614. HISTORY OF ECONOMIC THOUGHT

Throughout the year. (Offered only in fall term in 1967-68.) M 2-4. Mr. Adams.

### [615. BUSINESS CYCLES AND GROWTH]

Not offered in 1967-68.

### 616. INTERMEDIATE MATHEMATICAL ECONOMICS

Spring term. M W 1:25-2:40. Mr. Evans.

### 617-618. MATHEMATICAL ECONOMICS

Throughout the year. Mr. Stigum.

### 619-620. ECONOMETRICS

Throughout the year. Mr. Liu.

### SEMINAR IN ECONOMIC STATISTICS

(Industrial and Labor Relations 610)

Fall term. Mr. Evans.

106 ECONOMICS

621-622. EUROPEAN ECONOMIC HISTORY

Throughout the year. (Offered only in spring term in 1967-68.) Mr. Dowd.

623. AMERICAN ECONOMIC HISTORY

Fall term. Mr. Fleisig.

624. SELECTED PROBLEMS IN THE HISTORY OF THE  
INTERNATIONAL ECONOMY, 1800-1939

Spring term. Mr. Fleisig.

631-632. MONETARY THEORY AND POLICY

Throughout the year. Mr. Selden.

635-636. PUBLIC FINANCE: THEORY AND POLICY

Throughout the year. Messrs. Kilpatrick and von Furstenberg.

641-642. LABOR ECONOMICS

Throughout the year. Messrs. Galenson and Hildebrand.

651-652. INDUSTRIAL ORGANIZATION AND REGULATION

Throughout the year. (Offered only in Spring term 1967-68.) Messrs. Kahn and others.

661-662. INTERNATIONAL ECONOMICS: PURE THEORY AND POLICY

Throughout the year. Messrs. Davis and Jones.

[663-664. INTERNATIONAL ECONOMICS: BALANCE OF PAYMENTS  
AND INTERNATIONAL FINANCE]

Not offered in 1967-68.

671-672. ECONOMICS OF DEVELOPMENT

Throughout the year. Mr. Morse and others.

[673-674. ECONOMIC PLANNING]

Not offered in 1967-68.

675. ECONOMIC GROWTH MODELS

Fall term. Mr. Fei.

676. THE ECONOMY OF CHINA

Spring term. Mr. Chen.

678. ECONOMIC GROWTH IN SOUTHEAST ASIA

Spring term. Mr. Golay.

679. THEORY OF ECONOMIC DEVELOPMENT

Spring term. Prerequisite, Economics 675. Mr. Fei.

685. SEMINAR IN MATHEMATICAL ECONOMICS

(Also Mathematics 679)

Spring term. F 4-6. Messrs. Stigum and Wolfowitz.

## ENGLISH

Mr. E. G. Fogel, Chairman; Messrs. M. H. Abrams, B. B. Adams, C. B. Adams, R. M. Adams, A. R. Ammons, Miss Judith Anderson, Mr. D. N. Archibald, Miss Evelyn Barish, Mr. J. P. Bishop, Mrs. Jean Blackall, Messrs. M. D. Blehert, J. D. Boyd, S. M. Budick, A. F. Caputi, M. J. Colacurcio, V. A. De Luca, D. D. Eddy, R. H. Elias, S. B. Elledge, R. T. Farrell, F. G. Fike, J. A. Finch, D. H. Finlay, K. C. Frederick, P. A. Gottschalk, B. L. Hathaway, G. H. Healey, N. H. Hertz, Mrs. Judith Herz, Mr. T. D. Hill, Mrs. Carol Kaske, Messrs. R. E. Kaske, M. Kaufman, C. S. Levy, P. L. Marcus, Miss Carol Marks, Messrs. J. H. Matlack, D. E. McCall, J. R. McConkey, F. D. McConnell, H. S. McMillin, F. E. Mineka, A. M. Mizener, D. Novarr, J. S. Parker, S. M. Parrish, E. Rosenberg, Miss Joanna Russ, Messrs. W. M. Sale, Jr., W. D. Shaw, M. Shinagel, Mrs. Sandra Siegel, Messrs. W. J. Slatoff, B. O. States, Jr., C. S. Strout, W. Wetherbee III.

Students majoring in English should complete English 251-252 or 351-352 by the end of the sophomore year, and are required to take a minimum of eight courses or seminars in English numbered 300 or higher. The Department of English does not require specific upperclass courses, but it advises students to select courses in both the older and more recent periods and to avoid overconcentration on a single genre. Courses at the 300 level (many of which are lectures) are, in the main, surveys of the major areas of English and American literature. Courses at the 400 level (most of which are discussions) are, in the main, more limited in focus and more specialized in content; discussion courses are restricted to about fifteen students and seniors are given preference in selecting them. A student may not take a 400-level course until he has passed two 300-level courses and has registered for a third. Eight hours of work in writing at the 300 level or higher may be included in the minimum requirement for the major. Eight hours of work in satisfaction of the major may be taken outside the Department in courses numbered 300 or above in comparative literature, in a foreign literature, or in American studies, provided that these are approved by the student's adviser as correlating with courses elected within the Department.

Students who plan to major in English should secure from the Department's office, 245 Goldwin Smith, a brochure containing suggestions for prospective majors. All students who are candidates for the regular major in English and all who are considering the possibility of a major in English will be assigned, if they wish, to a major adviser in the second term of the freshman year. Such students should apply to the chairman of the Department in the ten-day period before preregistration. Freshmen who wish to be considered for the Honors program should also apply to the chairman during that period (though some applicants can usually be considered in the second term of the sophomore year). Freshmen provisionally accepted for the Honors program should enroll in English 351-352 in the sophomore year. Final acceptance will be determined at the end of the sophomore year, but second-term sopho-

mores provisionally accepted may preregister for the junior Honors seminar, English 491; if finally accepted, Honors students must subsequently register for English 492 and 493. All applicants for a major in English, whether regular or Honors, must by the end of the sophomore year have (1) completed the Distribution requirements; and (2) completed six hours of study in a foreign language (preferably in literature) in courses for which Qualification is prerequisite. Applicants for the regular major must have achieved grades of at least C in all courses in English during the first two years; applicants for the Honors major must have met the more rigorous requirements spelled out in this Department's brochure.

Prospective teachers of English in secondary schools who seek temporary certification in New York State must fulfill all the requirements of the major. In addition, they must elect a special program of three professional courses offered by the Department and the School of Education. A detailed statement concerning the preparation of teachers is available in the Office of the Department of English.

For students not majoring in English, the Department makes available a variety of courses at all levels. Courses at the 200 level are open to sophomores without prerequisite. Courses at the 300 level are open to juniors and seniors. Courses at the 400 level, unless a further prerequisite is stated in the course description, are open to students who have completed two 300-level courses in English and are enrolled in a third; non-majors with special qualifications may apply to the chairman for relief from this requirement.

**DISTRIBUTION REQUIREMENTS.** The Distribution requirement in the humanities is satisfied in English by English 225-226, 237-239, 243-245, 251-252, 255-256, or 351-352. The Distribution requirement in the expressive arts is satisfied in English by English 203-204 or 205-206.

## Courses for Freshmen

As part of the Freshman Humanities Program, the Department of English will offer 15 to 18 one-semester courses, each to be conducted in small sections with limited enrollment. The courses will be concerned with various forms of writing (narrative, biographical, expository), with the study of specific areas in English and American literature, and with the relation of literature to culture. Students may elect any two of these courses during their first year as one means of satisfying the Freshman Humanities requirement. Descriptions of these courses are found in the section called "Freshman Humanities Program" (page 22).

## English as a Second Language

The following courses are offered by the Division of Modern Languages. Foreign students should consult a member of that Division in 106 Morrill Hall.

## 102. ENGLISH AS A SECOND LANGUAGE

Fall term. Credit three hours. Prerequisite, placement by the instructor. Hours to be arranged.

## 151-152. ENGLISH AS A SECOND LANGUAGE

Throughout the year. Credit three hours a term. Open only to graduate students, with written approval of the Graduate School. Hours to be arranged.

## 211-212. ENGLISH AS A SECOND LANGUAGE

Throughout the year. Credit three hours a term. Prerequisite, placement by the instructor. M W F 10:10 or 11:15.

## Intermediate Courses

## 203-204. SPECIAL FORMS OF WRITING

Throughout the year. Credit three hours a term. English 203 or consent of the instructor prerequisite to English 204. Sections limited to 15. M W 12:20, T Th 10:10 or 2:30, and conferences to be arranged. Mr. Hathaway and others.

An introductory course in the practice of writing narrative, verse, and allied forms.

## 205-206. ADVANCED COMPOSITION

Throughout the year. Credit three hours a term. English 205 or consent of the instructor prerequisite to English 206. Sections limited to 18. M W 9:05 or T Th 10:10, and conferences to be arranged. Mr. Mineka and others.

For sophomores, juniors, and seniors who, having performed creditably in the Freshman Humanities Program (or in equivalent courses elsewhere), desire to carry on work in expository, critical, and personal essays.

## 225-226. THE TWENTIETH CENTURY

Throughout the year. Credit three hours a term. First term not prerequisite to the second. Not open to freshmen. M W F 1:25. Fall term, Mr. McCall. Spring term, Mr. Frederick.

An examination of important works of fiction and poetry by James, Conrad, Yeats, Lawrence, Joyce, Stevens, and Hemingway in the fall term, and by Eliot, Auden, Fitzgerald, Faulkner, and others in the spring term.

## 237. CRITICISM OF FICTION

Either term. Credit three hours. Strongly recommended for prospective English majors; open to freshmen. Limited to 25 students. Fall term, M W F 11:15. Mr. Sale. Spring term, M W F 2:30. Mr. Fike.

A critical study of the short story and some longer pieces of fiction.

## 239. CRITICISM OF POETRY

Either term. Credit three hours. Strongly recommended for prospective English majors; open to freshmen. Limited to 25 students. Fall term, M W F 2:30. Mr. Hertz. Spring term, M W F 11:15. Miss Marks.

Study of English and American poems, intended to encourage students to speak and write articulately about their experience of poetry.

## 243. SHAKESPEARE

Either term. Credit three hours. Primarily for students who do not expect to major in English. Limited to 25. Fall term, M W F 2:30. Mr. Kaufman. Spring term, M W F 3:35. Mr. Levy.

A critical study of representative plays from the principal periods of Shakespeare's career.

#### 245. STUDIES IN AMERICAN LITERATURE

Either term. Credit three hours. Primarily for students who do not expect to major in English. Limited to 25. Fall term, M W F 3:35. Mr. Matlack. Spring term, M W F 2:30. Mrs. Blackall.

Intensive study of major works of writers such as Whitman, Poe, Melville, James, Twain, Hemingway, Faulkner, Baldwin, and Ellison. In 1967-68, the focus will be upon crises in self-discovery as revealed in works dealing with the relationship of Americans and Europeans and with that of Negroes and whites.

#### 251-252. GREAT ENGLISH WRITERS

Throughout the year. Credit four hours a term. First term prerequisite to the second. Open only to prospective majors in English, who should take this course in the sophomore year. Sections limited to 25. M W F 1:25 or T Th S 11:15. Mr. Finch and others.

Studies in selected works of great English writers from the time of Chaucer to the twentieth century, with some consideration of the English literary tradition.

#### 255-256. BRITISH LITERATURE

Throughout the year. Credit three hours a term. First term not prerequisite to the second. T Th S 12:20. Fall term, Mr. Healey. Spring term, Mr. Archibald.

A study of works by notable English, Scottish, and Irish authors from the time of Chaucer to that of Yeats. First term: from Chaucer to Boswell. Second term: from Burns to Yeats.

#### 351-352. THE ENGLISH LITERARY TRADITION

Throughout the year. Credit four hours a term. First term prerequisite to the second. Open only to provisional candidates for Honors in English, who should take this course in the sophomore year. Sections limited to 25. M W F 1:25. Mr. Finch and others.

A consideration of the English literary tradition through a careful study of three or four major authors in each period from the time of Chaucer to the present.

## Courses for Upperclassmen

These courses are limited to juniors and seniors, with the following exception: students who are candidates for Honors in English may elect one 300 level course in the second term of their sophomore year.

#### 306. THE EARLIEST ENGLISH LITERATURE

Spring term. Credit four hours. M W F 12:20. Mr. Hill.

Cultural backgrounds, reading, and critical analysis of Anglo-Saxon poetry in translation, pagan and Christian epic, elegy, heroic legend, and other forms. Attention will be given to the relations of this literature to that of later periods.

#### 308. THE SIXTEENTH CENTURY

Spring term. Credit four hours. M W F 9:05. Mr. Levy.



The main traditions in English poetry from 1530 to 1603, with some attention to the prose of the period. Special emphasis on such figures as Wyatt, Sidney, Spenser, Marlowe, and Shakespeare.

### 311. THE SEVENTEENTH CENTURY

Fall term. Credit four hours. M W F 9:05. Mr. Robert Adams.

The literary, imaginative, and intellectual achievement of the age will be studied in close relation to its historical background, particularly the Puritan Revolution and the rise of secularism.

### 315. THE AGE OF POPE

Fall term. Credit four hours. M W F 2:30. Mr. Elledge.

Readings: Dryden, Congreve, Pope, Gay, Swift, Thomson, and Young; Law, Locke, Shaftesbury, and Mandeville; Addison, Steele, and Lady Mary Wortley Montagu; Defoe, Richardson, Fielding, and Smollett. Topics: art, religion, philosophy, politics, manners, and taste in an age of elegance.

### 316. THE AGE OF JOHNSON

Spring term. Credit four hours. M W F 2:30. Mr. Archibald.

A study of the poetry, criticism, biography, and fiction of Johnson and his circle; the poetry of Gray, Burns, and others; the decline of neoclassicism.

### 317. THE ROMANTIC POETS

Fall term. Credit four hours. T Th S 11:15. Mr. Finch.

A critical study of the poetry of Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats.

### 320. THE VICTORIANS

Spring term. Credit four hours. T Th S 11:15. Mr. Mineka.

The major poets and prose writers from Carlyle to Bernard Shaw, studied in relation to the thought of the time and to the literature of the twentieth century.

### 321. THE TWENTIETH CENTURY

Fall term. Credit four hours. M W F 10:10. Mr. Mizener.

The character of twentieth-century literature, as shown by the work of eight or ten major poets and novelists, from Yeats to Robert Lowell.

### 329. THE GROWTH OF AMERICAN LITERATURE

Fall term. Credit four hours. M W F 1:25. Mr. Colacurcio.

A literary history of America from Puritan beginnings to the Civil War.

### 330. MAJOR AMERICAN WRITERS SINCE THE CIVIL WAR

Spring term. Credit four hours. M W F 1:25. Mr. Slatoff.

A study of selected works by important American writers from Whitman to Faulkner.

### 336. THE MODERN AMERICAN NOVEL

Spring term. Credit four hours. M W F 10:10. Mr. Sale.

A critical study of American fiction, beginning with Howells and James and concluding with selected contemporary novels.

### 337. THE NINETEENTH-CENTURY ENGLISH NOVEL

Fall term. Credit four hours. M W F 12:20. Mr. Rosenberg.

A critical study of English fiction from Jane Austen to Conrad.

339. REPRESENTATIVE ENGLISH DRAMAS

Fall term. Credit four hours. M W F 11:15. Mr. Kaufman.

A study of the evolution of the principal traditions of English drama through selected plays from the Middle Ages to the present century.

346. MODERN DRAMA

Spring term. Credit four hours. M W F 11:15. Mr. McMillin.

A study of drama from Ibsen to the present day, including major continental playwrights, and giving special attention to Shaw, O'Casey, O'Neill, and Miller.

365. CHAUCER

Fall term. Credit four hours. T Th S 12:20. Mr. Kaske.

Reading and critical analysis: *Troilus* and a large selection from the *Canterbury Tales*.

368. SHAKESPEARE

Spring term. Credit four hours. M W F 11:15. Mr. Caputi.

An introduction to the works of Shakespeare, based on a selection of plays representative of the stages of his artistic development and the range of his achievement.

371. MILTON

Fall term. Credit four hours. T Th S 10:10. Mr. Novarr.

Study of Milton's poetry and selected prose, with emphasis on *Paradise Lost*.

383. THE ENGLISH LANGUAGE

Fall term. Credit four hours. M W F 3:35. Mr. Farrell.

A historical and topical analysis of the development of English, from its beginnings to the present.

385-386. NARRATIVE WRITING

Throughout the year. Credit four hours a term. Prerequisite, English 204 or 206 or consent of the instructor. T Th 12:20 and conferences to be arranged. Fall term, Messrs. Slatoff and McCall. Spring term, Messrs. McConkey and Rosenberg.

A course in the writing of fiction; study of models; analysis of students' work.

387. VERSE WRITING

Fall term. Credit four hours. Prerequisite, consent of the instructor. T Th 1:25-3:20. Mr. Hathaway.

The techniques of poetry; study of models; criticism of students' poems; personal conferences.

402. LITERARY CRITICISM

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 3:35. Mr. States.

Study of some major critics in the English tradition, from Sidney and Dryden to Kenneth Burke and Northrop Frye.

404. PROBLEMS IN THE RENAISSANCE

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 9:05. Mr. Robert Adams.

Studies in three areas: Montaigne, Browne, and the open space of skepticism; Castiglione, Spenser, and the shape of social virtue; Machiavelli, More, and the advising of a prince.

#### 405. SPENSER

Fall term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 9:05. Miss Anderson.

The realms of actuality and imagination in the poetry of Edmund Spenser. Emphasis on *The Faerie Queene*.

#### 412. ELIZABETHAN AND JACOBEAN DRAMA

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. T Th S 9:05. Mr. Barry Adams.

Critical study of plays by Marlowe, Marston, Jonson, Beaumont, Fletcher, Ford, and others.

#### 413. SHAKESPEARE

Fall term. Credit four hours. *Discussion*. Prerequisite, English 368 and consent of the instructor. M W F 11:15. Messrs. Barry Adams and Caesar Adams.

An intensive study of three or four of Shakespeare's plays.

#### 421. THE DEVELOPMENT OF SEVENTEENTH-CENTURY PROSE

Fall term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. T Th S 9:05. Mr. Finlay.

A study of the reaction against the rhetorical ideal of prose writing and the movement toward the modern ideal of self-expression. Major emphasis on Hooker, Bacon, Donne, Andrewes, Burton, and Browne.

#### 422. THE SCHOOL OF DONNE.

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 12:20. Miss Marks.

The mind and poetic art of Donne, Marvell, and related poets.

#### 424. DRYDEN AND HIS TIME

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 11:15. Mr. Budick.

The major poetry, drama, and criticism of Dryden and his contemporaries, and the ways in which the English literary tradition was modified by Restoration science, politics, philosophy, and theology.

#### 433. THE ENGLISH NOVEL IN THE EIGHTEENTH CENTURY

Fall term. Credit four hours. T Th S 9:05. Mr. Shinagel.

The rise of the English novel. Critical study of works by Nashe and Bunyan precedes consideration of the major novelists: Defoe, Richardson, Fielding, Sterne, and Smollett.

#### 436. ENGLISH POETRY AND THE SUBLIME

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. T Th S 10:10. Mr. Hertz.

Some theoretical works on the notion of the sublime (Longinus, Burke, Kant) will be considered. Emphasis on poems of the eighteenth and early nineteenth century (by Thomson, Collins, Gray, Young, Akenside, Wordsworth) which were considered "sublime" by contemporary readers.

437. THE EARLY ROMANTICS

Fall term. Credit four hours. *Discussion.* Prerequisite, consent of the instructor. T Th S 10:10. Mr. De Luca.

Intellectual and artistic development in the poetry of Blake, Wordsworth, and Coleridge.

[438. MASTERWORKS OF THE ROMANTIC PERIOD]

Not offered in 1967-68.

Spring term. Credit four hours. Mr. Abrams.

440. STUDIES IN ROMANTIC POETRY

Spring term. Credit four hours. *Discussion.* Prerequisite, consent of the instructor. T Th S 10:10. Mr. McConnell.

Emphasis on the work of Byron, Shelley, and Keats, and on the later poems of Wordsworth.

442. THE OLD WORLD AND THE NEW

Spring term. Credit four hours. T Th S 9:05. Mr. Strout.

The American experience of Europe, as reflected in literature, studied in relation to historical developments. Selected writings of Irving, Hawthorne, Melville, Twain, James, Hemingway, and others.

444. HAWTHORNE AND MELVILLE

Spring term. Credit four hours. *Discussion.* Prerequisite, English 329 and consent of the instructor. M W F 1:25. Mr. McCall.

Emphasis on critical study of the major works of fiction.

446. HAWTHORNE AND MELVILLE

Spring term. Credit four hours. *Discussion.* Prerequisite, English 329 and consent of the instructor. M W F 2:30. Mr. Colacurcio.

The fiction of Hawthorne and Melville against the background of mid-nineteenth-century religious uncertainty.

447. JAMES AND TWAIN

Fall term. Credit four hours. *Discussion.* Prerequisite, consent of the instructor. M W F 1:25 or 2:30. Mrs. Blackall and Mr. Matlack.

Intensive examination of selected texts, with special attention to methods, points of view, and portrayal of the American character.

448. STUDIES IN NINETEENTH-CENTURY AMERICAN LITERATURE

Spring term. Credit four hours. *Discussion.* Prerequisite, consent of the instructor. T Th S 11:15. Mr. Matlack.

Emphasis on such major writers as Emerson, Thoreau, and Whitman.

451. MAJOR VICTORIAN POETS

Fall term. Credit four hours. M W F 3:35. Mr. Shaw.

The poetry of Tennyson, Browning, and Arnold, and a brief survey of the Pre-Raphaelites.

452. THE VICTORIAN POLITICAL NOVEL

Spring term. Credit four hours. *Discussion.* Prerequisite, consent of the instructor. M W F 12:20. Miss Barish.

English politics and the novelist's art in works by Dickens, Gaskell, Eliot, Butler, and others.

455. LATE VICTORIAN AND EDWARDIAN LITERATURE (1890-1914)

Fall term. Credit four hours. T Th S 11:15. Mr. Parrish.

The ways in which such writers as Hopkins and Housman, Hardy and Moore, Wilde and Shaw, Beerbohm and Wells changed Victorian attitudes and influenced our own.

459. AMERICAN POETRY SINCE 1896.

Fall term. Credit four hours. T Th S 10:10. Mr. Hathaway.

Main currents in American poetry of the first half of this century, with emphasis upon the revolt against tradition.

461. STUDIES IN THE NOVEL

Fall term. Credit four hours. *Discussion*. Prerequisite, English 336 and consent of the instructor. M W F 10:10. Mr. Sale.

A study of representative shorter American fiction.

462. STUDIES IN MODERN DRAMA

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 10:10. Mr. Kaufman.

A study of themes and dramatic form in T. S. Eliot, O'Casey, Tennessee Williams, and the postwar English playwrights, such as Pinter and Osborne.

464. STUDIES IN MODERN FICTION

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 10:10. Mr. Blehert.

Emphasis on the involuted novel by such writers as Nabokov, Joyce, Kafka, Beckett, and Robbe-Grillet.

465. TWENTIETH-CENTURY POETS

Fall term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 12:20. Mr. Marcus.

Study of major poets, with emphasis on Yeats.

466. THE ANGLO-IRISH LITERARY TRADITION

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 1:25. Mr. Archibald.

Concentration on Jonathan Swift and James Joyce: a study of their major works, of some relationships between them, and of what this suggests about the Irish situation.

[471. MODERN THEORIES OF POETRY]

Not offered in 1967-68.

Fall term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W 1:25. Mr. Ammons.

Each student will select a poet and examine the relations between his theory and practice.

482. MODERN ENGLISH GRAMMAR AND USAGE

Spring term. Credit four hours. *Discussion*. Prerequisite, consent of the instructor. M W F 3:35. Mr. Hathaway.

Study of the varieties of usage and of the structures of English, with emphasis on the transformations of basic sentence patterns.

485-486. SEMINAR IN WRITING

Throughout the year. Credit four hours a term. *Discussion.* Prerequisite, English 385-386 or consent of the instructor. W 1:25-3:20. Fall term, Mr. McConkey. Spring term, Mr. Hathaway.

For advanced writing students who should be prepared to complete, during the year, a writing project in verse, narrative, or essay. Exploration of principles of literary theory pertinent to projects undertaken.

MEDIEVAL LITERATURE

(Comparative Literature 327-328)

THE LITERATURE OF EUROPE

(Comparative Literature 337-338)

MYTH AND LITERATURE

(Comparative Literature 416)

SEMINAR IN AMERICAN STUDIES

(American Studies 401-402)

THE TEACHING OF ENGLISH

Spring term. Credit four hours. Taught jointly by the Department of English and the School of Education. M 1:25-3:20. Miss Tweedie.

Emphasis on the teaching of reading, writing, and language. Undergraduates accepted for the English-teaching program should register for this course in their junior year; all others must see Miss Peard in Stone Hall before registering.

## Honors Courses

Students in the Honors program elect one course numbered English 491 and one numbered English 492 in the junior year; in the fall of the senior year, they elect English 493.

491A. ROMANTIC AND REALISTIC MODES OF FICTION

Fall term. Credit four hours. T Th 1:25-3:20. Mrs. Blackall.

An inquiry into the kinds of experience and of reality that each of these modes of fiction may be made to convey, with reference to the contrasting points of view, subject matter, conventions, and styles that characterize romantic and realistic fiction. Works by Ann Radcliffe, Melville, Emily Brontë, George Eliot, Thackeray, George Moore, and Dickens will be considered.

491B. THE MODE OF ROMANCE IN CHAUCER AND SHAKESPEARE

Fall term. Credit four hours. T Th 1:25-3:20. Mrs. Herz.

A reading of selected tales and the *Troilus and Criseyde* of Chaucer and selected plays of Shakespeare (including *A Midsummer's Night's Dream*, *Winter's Tale*, and *The Tempest*) in a study of the mode of romance.

491C. THREE ENGLISH POETS

Fall term. Credit four hours. T Th 1:25-3:20. Mr. McConkey.

A study of the poetry of Dryden, Tennyson, and Yeats against the background of their contemporaries.

## 491D. STUDIES IN ENGLISH DRAMA

Spring term. Credit four hours. T Th 1:25-3:20. Mr. States.

An intensive study of moments of crystallization and achievement in the history of English drama. Special attention to be given to selected Elizabethan, Restoration, and contemporary plays.

## 491E. APPROACHES TO POETRY

Fall term. Credit four hours. T Th 1:25-3:20. Mr. Fike.

A study of the value and relevance of the main critical approaches to the interpretation of poetry, through a reading of selected poems and related critiques.

## 491F. FORMS OF EIGHTEENTH-CENTURY LITERATURE

Fall term. Credit four hours. T Th 1:25-3:20. Mr. Budick.

A study of the development and function of form in the major imaginative works of Dryden, Pope, Johnson, and some of their contemporaries.

## 492A. SHAKESPEARE AND THE CRITICS

Spring term. Credit four hours. T Th 1:25-3:20. Mr. Elledge.

Six or eight plays, read in a course equally concerned with methods and aims of literary criticism.

## 492B. THE CRITICISM OF POETRY

Spring term. Credit four hours. T Th 1:25-3:20. Mr. Finch.

An attempt to define and possibly answer some questions posed by reading particular poems (of the major Romantics, Marvell, Pope, and some modern poets), but also by reading any poem. Consideration of such books as Shumaker's *Elements of Critical Theory*, Fischer's *Necessity of Art*, and Collingwood's *Principles of Art*.

## 492C. THE CRITICISM OF FICTION

Spring term. Credit four hours. T Th 1:25-3:20. Mr. Sale.

A consideration of the critical problems that arise in the reading of novels by such authors as Fitzgerald, Hemingway, Joyce, James, Lawrence, and Graham Greene.

## 492D. THE NOVEL OF MANNERS

Spring term. Credit four hours. T Th 1:25-3:20. Mr. Shaw.

A study of ways of presenting experience and expressing values in the novel of manners and of the sense of reality that leads writers to adopt this form. The novelists to be read will include Jane Austen, Anthony Trollope, George Eliot, Henry James, E. M. Forster, and D. H. Lawrence.

## 492E. TUDOR-STUART TRAGEDY

Fall term. Credit four hours. T Th 1:25-3:20. Mr. Gottschalk.

A study of selected major forms of English Renaissance tragedy, including several plays of Shakespeare and his contemporaries.

## 492F. THE CONCEPT OF WIT

Spring term. Credit four hours. T Th 1:25-3:20. Mr. Finlay.

The concept of wit, its sources, and its relation to poetic theory will be studied in Jonson, Marvell, the Cavalier poets, and Pope.

## 493. HONORS ESSAY TUTORIAL

Fall term. Credit four hours. Hours and instructor by arrangement.

## Graduate Courses

These courses are for graduate students, but a few especially qualified undergraduates may enroll in 500 level courses. All students must secure the consent of the instructor before registering.

### 500. INTRODUCTION TO ADVANCED RESEARCH

Spring term. Credit four hours. Mr. Novarr.

A study of methods and materials relevant to the solution of problems in scholarly and critical interpretation. For candidates for the Ph.D. degree.

### 501. READINGS IN OLD ENGLISH

Fall term. Credit four hours. Mr. Farrell.

Elements of Old English grammar and readings in the shorter literary texts.

### 502. BEOWULF

Spring term. Credit four hours. Prerequisite, English 501. Mr. Hill.

A reading of the poem in Old English and discussion of the literary problems which it presents.

### 503. MIDDLE ENGLISH

Fall term. Credit four hours. Mr. Kaske.

Reading and critical analysis of major works, excluding Chaucer and the drama.

### 504. CHAUCER

Spring term. Credit four hours. Mr. Kaske.

Reading and critical analysis, with emphasis on *Troilus* and *Canterbury Tales*.

### [505. GRAMMATICAL ANALYSIS]

Not offered in 1967-68.

Fall term. Credit four hours. Mr. Hathaway.

### 506. PHILOLOGICAL PROBLEMS IN THE STUDY OF ENGLISH LITERATURE

Spring term. Credit four hours. Mr. Farrell.

An examination of major developments in the English language from Middle English to the present and a consideration of the problems which these changes present in the reading of literary texts.

### [507. THEORY OF PROSE]

Not offered in 1967-68.

Fall term. Credit four hours. Mr. Elledge.

### [509. MEDIEVAL DRAMA]

Not offered in 1967-68.

Spring term. Credit four hours. Mr. Barry Adams.

### 513. ELIZABETHAN AND JACOBEAN DRAMA

Fall term. Credit four hours. Mr. Barry Adams.

Studies in the dramatic works of Shakespeare's contemporaries and immediate predecessors.



## 515. STUDIES IN RENAISSANCE LITERATURE

Fall term. Credit four hours. Mr. Robert Adams.

Renaissance texts having a relation to Ovid's *Metamorphoses*.

## [517. EPIC AND ALLEGORY IN THE ENGLISH TRADITION]

Not offered in 1967-68.

Fall term. Credit four hours. Miss Anderson.

## [520. JONSON AND DRYDEN]

Not offered in 1967-68.

Spring term. Credit four hours. Mr. Novarr.

## 529. CLIMATES OF OPINION IN AMERICAN CULTURE

Fall term. Credit four hours. Mr. Strout.

Studies in Puritanism, the Enlightenment, and Romanticism as intellectual movements and literary contexts.

## 534. THE NEW ENGLAND MIND, 1620-1860

Spring term. Credit four hours. Mr. Colacurcio.

Religious idealism in the literature of Puritan and post-Puritan America. The emphasis in 1967-68 will be on Edwards and Emerson.

## [537. STUDIES IN AMERICAN LITERATURE]

Not offered in 1967-68.

Fall term. Credit four hours. Mr. Elias.

## 542. EIGHTEENTH-CENTURY LITERATURE

Spring term. Credit four hours. Mr. Eddy.

In 1967-68 the emphasis will be on the writings of Alexander Pope.

## 549-550. CREATIVE WRITING

Throughout the year. Credit four hours a term. Fall term, Mr. McConkey. Spring term, Mr. Hathaway.

## 561. DRAMATIC LITERATURE: TRAGEDY

Fall term. Credit four hours. Mr. Caputi.

A study of the history of tragic expression in drama, using representative plays by Sophocles, Shakespeare, Racine, and selected contemporary authors.

## 571. ROMANTIC POETRY

Fall term. Credit four hours. Mr. Finch.

Poetry and criticism of the major poets, with emphasis on the longer works.

## 575. VICTORIAN PROSE

Fall term. Credit four hours. Mr. Mineka.

Major emphasis upon writers of non-fictional prose, but with some attention to the novel.

## 576. VICTORIAN POETRY

Spring term. Credit four hours. Mr. Mineka.

Major emphasis upon Tennyson, Browning, and Arnold, but with some study of other Victorian poets.

[580. STUDIES IN ENGLISH FICTION: CONRAD]

Not offered in 1967-68.

Spring term. Credit four hours. Mr. Slatoff.

[584. FORMS OF THE NOVEL: HENRY JAMES]

Not offered in 1967-68.

Spring term. Credit four hours. Mrs. Blackall.

591. TWENTIETH-CENTURY LITERATURE: YEATS

Fall term. Credit four hours. Mr. Archibald.

Exploration of Yeats's dialogue with history and his encounters with earlier imaginations (Blake, Shelley, Swift, Burke). Emphasis on the poetry and on questions about literary influence.

597. LITERARY CRITICISM

Fall term. Credit four hours. Mr. Shaw.

The application of literary theories to the criticism of poetry. Topic for 1967-68: the Victorian and modern sage.

598. MASTER'S ESSAY

Spring term. Credit four hours. Members of the Department.

608. STUDIES IN MEDIEVAL LITERATURE

Spring term. Credit four hours. Mr. Kaske.

Advanced research in English (and other) medieval literature.

616. STUDIES IN THE SIXTEENTH CENTURY: SIR PHILIP SIDNEY

Spring term. Credit four hours. Mr. Fogel.

An examination of the literary achievement of Sidney, as poet and writer of fiction, with particular reference to the two versions of the *Arcadia* and the theories embodied in *The Defence of Poesie*.

617. STUDIES IN THE SEVENTEENTH CENTURY

Fall term. Credit four hours. Mr. Novarr.

The poetry and prose of John Donne. An intensive examination of the scholarly and critical work pertinent to an understanding of Donne and of the late Renaissance.

622. MILTON

Spring term. Credit four hours. Mr. Elledge.

Milton's English poems and selected prose.

639. AMERICAN POETRY

Fall term. Credit four hours. Mr. Elias.

A study of Wallace Stevens: his relation to the 1920's, his development, selected critical and textual problems.

662. SHAKESPEARE

Spring term. Credit four hours. Mr. McMillin.

A close study of *King Lear*, involving textual, theatrical, and critical approaches. The play will be read in the context of Shakespearean drama from 1603 to 1611.

672. WORDSWORTH

Spring term. Credit four hours. Mr. Parrish.

Critical and textual studies based upon the Dove Cottage manuscript archive.

[673. THE ROMANTIC PERIOD]

Not offered in 1967-68.

Fall term. Credit four hours. Mr. Abrams.

681. HENRY JAMES: THE MAJOR PHASE

Fall term. Credit four hours. Mr. Mizener.

The work of James's last period, from about 1900.

684. STUDIES IN AMERICAN FICTION

Spring term. Credit four hours. Mr. Slatoff.

In 1967-68, the course will concentrate on the novels of William Faulkner.

## GEOLOGICAL SCIENCES

### (Geology, Geochemistry, Geophysics, Geobiology, Physical Geography, Applied Fields)

Mr. G. A. Kiersch, Chairman; Messrs. A. L. Bloom, L. Y. Chang, K. F. Clark, W. S. Cole, W. E. LeMasurier, E. D. McKee, S. S. Philbrick, J. W. Wells.

For admission to a major in geological sciences, students should complete Geology 101-102, Mathematics 111-112, and Chemistry 107-108, and should be officially accepted by the departmental major adviser. Students majoring in geological sciences in addition complete the following: Physics 207-208; a three-credit-hour course in mechanical drawing; and a two-credit-hour course in plane surveying. Recommended as further courses are Mathematics 113 and physical chemistry.

After admission to the major, the minimum requirements are: (1) Geology 351-352, 322, 441, 471-472, and 490; (2) two elective courses in geology numbered 300 or higher; and (3) eight semester hours' credit at a designated summer camp in field geology. The classical aspects of geology, including field mapping, are integrated with experimental and theoretical studies to give a balanced view of geological science.

Students considering graduate study in the physical branches of geological science should select a Distribution sequence from mathematics, physics, chemistry, or engineering; whereas those planning graduate study in aspects of geobiology should elect a Distribution sequence of four courses in biological science.

The Distribution requirement in physical sciences is satisfied in geological sciences by Geology 101-102.

Students wishing certification as earth science teachers must take courses in geological sciences in their Science Education program. Some appropriate groupings are: Geology 212, 312, 314 and 441; Geology 202, 441, 471, 472; Geology 351, 352 and 461, 462 or 451, 452; Geology 322, 421, 441, 542.

## Geography, Physical

### FRESHMAN AND SOPHOMORE COURSES

#### 111. EARTH SCIENCE

Fall term. Credit three hours (but see Earth Science Laboratory 113). Combine with Geography 212 for a survey of physical geography. Lectures, M W F 9:05. Mr. Bloom.

Physical geography, including the spatial relationships of the earth, moon, and sun that determine the figure of the earth, time, seasons, atmospheric and oceanic circulation, and climates.

#### 113. EARTH SCIENCE LABORATORY

Fall term. Credit one hour. To be taken concurrently with Earth Science 111. Laboratory W or Th 2-4:25. Mr. Bloom.

Observation and calculation of daily, monthly, and seasonal celestial events; topographical mapping and map interpretation; world climatic regions.

#### 212. MINERAL RESOURCES

Spring term. Credit three hours. Lectures, M W F 9:05, Mr. Clark.

Utilization of and our dependence upon mineral resources; their nature, occurrence, distribution, and availability at home and abroad. Political and economic aspects of their availability and control.

### JUNIOR, SENIOR AND GRADUATE COURSES

#### 312. GEOGRAPHY OF ANGLO-AMERICA

Spring term. Credit four hours. Prerequisite, Geography 111, or Geology 102. Lectures, M W F 9:05 and additional assigned problems. Staff. Alternate-year course; offered in 1967-68.

The geographic provinces of Anglo-America, their geomorphic expression, climates, resources, development, and interrelationships.

#### [314. CONTINENTAL GEOGRAPHY]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisites, Geography 111 or Geology 102. Lectures, M W F 9:05 and additional assigned problems. Staff. Alternate-year course.

#### 610. SPECIAL WORK

Throughout the year. Credit two hours a term. Prerequisite, consent of the instructor. Staff.

Special or original investigations in physical geography on the graduate level.

## General Geology

### FRESHMAN AND SOPHOMORE COURSES

#### Principles and Processes

#### 101. INTRODUCTORY GEOLOGICAL SCIENCE

Fall term. Credit three hours. Lectures, T Th 11:15. Two scheduled pre-

liminary examinations will be held at 7:30 p.m. during the term. Laboratory, M T W Th or F 2-4:25, S 10:10-12:35. Field trips. Mr. Philbrick and staff.

Designed to give general students a comprehensive understanding of the earth processes, features, and history. Provides the basic knowledge necessary for more specialized courses or a major in geological science.

Study of the earth, particularly materials, structure, internal condition, and the physical and chemical processes at work. Principles of interpretation of earth history, evolution of continents, oceans, mountain systems, and other features; development of its animal and plant inhabitants.

## 102. INTRODUCTORY GEOLOGICAL SCIENCE

Spring term. Credit three hours. Prerequisite Geology 101. Lecture, T Th 11:15. Two scheduled preliminary examinations will be held at 7:30 p.m. during the term. Laboratory, M T W Th or F 2-4:25, S 10:10-12:35. Field trips. Mr. Philbrick and staff.

A continuation of Geology 101.

## 202. ANCIENT LIFE

Spring term. Credit three hours. No prerequisite, but Geology 102 is desirable. Lectures, M W F 11:15. Mr. Wells.

A cultural course devoted to a review of the fossil remains of life in the geologic past as the main basis of the concept of organic evolution. Vertebrate forms from fish to man are stressed.

## 203. GEOLOGY FOR ENGINEERS

Fall term. Credit three hours. Lectures, T Th 9:05. Laboratory, T W or Th 1:25-4:25. A scheduled laboratory examination will be held at 7:30 p.m. the last week of the term. Field trips. Mr. Kiersch.

The principles of geological science with emphasis on the physical phenomena, rock properties, natural environments, and historical events important in applied science. The cause and effect of geological problems encountered in the planning, construction, and operation of engineering works are analyzed in the laboratory along with the influence of environmental factors.

# JUNIOR, SENIOR AND GRADUATE COURSES

## Physical Processes

### 322. STRUCTURAL GEOLOGY

Spring term. Credit four hours. Prerequisite, Geology 102 (or 203) and 351; 352 recommended. Lectures, M W 11:15. Laboratory, M 2-4:25, and additional assigned problems. Field trips. Mr. Kiersch.

Nature, origin, and recognition of geologic structures. Behavior of geologic materials, stresses, geomechanical and tectonic principles applied to the solution of geologic problems. Analysis of structural features by three-dimensional methods.

### 421. SEDIMENTATION

Fall term. Credit four hours. Prerequisite, Geology 352; Geology 441 recommended. Lectures, M W 11:15. Laboratory, M 2-4:25, and additional laboratory work. Field trips. Messrs. Philbrick and Kiersch. Alternate-year course offered in 1967-68.

Source materials, mechanics of transport and dispersal, depositional en-

vironments, lithification and diagenesis of sediments. Analysis of common problems in applied fields due to these phenomena.

#### 522. FLUVIAL PROCESSES

(Also Civil Engineering 2333)

Spring term. Credit two hours. Prerequisite, consent of instructors. Seminar, hours to be arranged. Field trips. Course offered jointly with the School of Civil Engineering on demand. Messrs. Graf and Kiersch.

The common problems of fluvial processes, hydraulics, and sediment transport are studied along with the appropriate analytical methods and experimental techniques.

#### 441. GEOMORPHOLOGY

Fall term. Credit four hours. Prerequisite, Geology 102. Lectures, T Th 9:05. Laboratory, T 2-4:25, and additional assigned problems. Mr. Bloom.

Description and interpretation of land forms in terms of structure, process, and stage.

#### 542. GLACIAL AND PLEISTOCENE GEOLOGY

Spring term. Credit three hours. Prerequisite, Geology 441 or consent of instructor. Lectures, T Th 9:05. Laboratory, T 2-4:25. Several Saturday field trips. Mr. Bloom.

Glacial processes and deposits and the stratigraphy of the Pleistocene.

#### 444. GEOLOGICAL OCEANOGRAPHY

Spring term. Credit three hours. Prerequisite, Geology 102 or Biological Sciences 461. Lectures, M W F 9:05. Field trips. Mr. Bloom.

Shoreline erosion, transportation and deposition; origin and structure of continental shelves and ocean basins. Geologic processes and geomorphic development in the marine environment.

## Geochemistry

### Mineral Materials and Processes

#### 351. MINERALOGY

Fall term. Credit four hours. Prerequisite, Geology 102, Chemistry 108. Lecture, M 10:10. Laboratory, W F 2-4:25, and additional assigned problems. Mr. Chang.

Crystallography, crystal chemistry, and systematic mineralogy of the ore and rock-forming minerals.

#### 352. PETROLOGY

Spring term. Credit four hours. Prerequisite, Geology 351. Lectures, M F 10:10. Laboratory, Th 2-4:25 and additional assigned problems. Mr. LeMasurier.

Composition, classification, and origin of igneous, sedimentary, and metamorphic rocks.

#### 451. OPTICAL MINERALOGY

Fall term. Credit four hours. Prerequisite, Geology 351. Lecture, T 11:15. Laboratory, T W 2-4:25 and additional assigned problems. Mr. LeMasurier.

Optical properties of crystals and their application to the determination and study of common rock-forming minerals with the petrographic microscope.

#### 452. OPTICAL PETROGRAPHY

Spring term. Credit four hours. Prerequisites, Geology 352 and 451. Lecture, T 11:15. Laboratory, T W 2-4:25, and additional assigned problems. Mr. LeMasurier.

Description, classification, and determination of the origin of igneous, metamorphic, and sedimentary rocks by the use of the petrographic microscope.

#### 551. GEOCHEMISTRY

Fall term. Credit three hours. Prerequisite, Geology 352. Lectures, M W F 8. Mr. Chang.

Distribution of major and minor elements in the earth, geochemical cycles of the elements, and chemistry of weathering and petrogenesis.

#### [554. X-RAY ANALYSIS]

Not offered in 1967-68.

Spring term. Credit two hours. Prerequisite, Geology 352 or consent of instructor. Lecture, W 12:20. Laboratory F 2-4:25. Mr. Chang. Alternate-year course.

#### 653. ADVANCED PETROLOGY

Fall term. Credit three hours. Prerequisite, Geology 452. Lectures, T Th 9:05. Laboratory, Th 2-4:25. Mr. LeMasurier.

Methods of study, geologic and geochemical relationships, and petrogenesis of igneous and metamorphic rocks.

#### 656. ADVANCED MINERALOGY

Spring term. Credit three hours. Prerequisites, Geology 452 and 554. Lectures, T Th 9:05. Laboratory, Th 2-4:25. Mr. Chang.

Methods of study, advanced crystal chemistry, and genetic significance of major mineral groups.

## Mineral Deposits

#### 461. MINERAL DEPOSITS: METALS

Fall term. Credit four hours. Prerequisites, Geology 352. Lectures, M W F 10:10. Laboratory, F 2-4:25. Field trips. Mr. Clark.

Principles and processes involved in the formation of mineral deposits. Modes of occurrence, origin, distribution, and utilization of the major, rare, and minor metals.

#### 462. MINERAL DEPOSITS: NON-METALS

Spring term. Credit four hours. Prerequisite, Geology 461 or consent of instructor. Lectures, M W F 10:10. Laboratory, F 2-4:25. Field trips. Mr. Clark.

Properties, occurrence, associations, distribution, and economic utilization of the industrial minerals and rocks.

#### 563. ORE MICROSCOPY

Fall term. Credit two hours. Prerequisites, Geology 451 and 461. Laboratory, F S 7:30-9:55. Alternate-year course; offered in 1967-68. Mr. Clark.

Identification of ore-minerals in polished sections which reflect light by etching and microchemical reactions; study and interpretation of mineral relationships.

## Geophysics

### [581. EXPLORATION GEOPHYSICS]

Not offered in 1967-68.

Fall term. Credit three hours. Prerequisites, Physics 208, Geology 102 or 203; recommended Geology 322. Lectures, T Th 9:05. Laboratory, S 10:10-12:35, and assigned problems. Mr. Clark. Alternate-year course.

## Applied Geological Science

### 532. HYDROGEOLOGY

Spring term. Credit three hours. Prerequisites, Geology 322, 352; recommended, Geology 441. Lectures, M W 9:05. Laboratory, T 2-4:25 and field trips. Mr. Philbrick. Alternate-year course. Offered in 1967-68.

Hydrologic cycle and water provinces; occurrence, movement, quantity, and chemical quality of ground water in porous media. Water resources development.

### 533. ENGINEERING GEOLOGY — THEORY AND ENVIRONMENTS

Fall term. Credit three hours. Prerequisites, Geology 322, 352; recommended, Geology 441. Lectures, M W 11:15. Laboratory, M 2-4:25 and field trips. Mr. Kiersch. Alternate-year course. Offered in 1967-68.

Advanced study of the physical phenomena and rock properties of special importance from the planning through the operation stages of engineering works; includes underground fluids, subsidence, gravity movement, seismicity, geomechanics and stresses, weathering, and geologic materials of construction. Analysis of geologic problems encountered in practice; predicting the influence of natural and man-made environmental factors.

### [535. ENGINEERING GEOLOGY-PRACTICE]

Not offered in 1967-68.

Fall term. Credit three hours. Prerequisites, Geology 533 or Geology 322-352, and 441. Lectures, M W 9:05. Laboratory, M 2-4:25 and field trips. Mr. Philbrick. Alternate-year course.

### 561. FUNDAMENTALS OF MINING GEOLOGY

Fall term. Credit three hours. Prerequisites, Geology 461, 462. Lectures, M W F 10:10. Assigned problems. Field trips. Mr. Clark. Alternate-year course. Offered in 1967-68.

Principles of geological, geophysical, and geochemical techniques used in mineral exploration. Mining geology, guides to ore, mining methods.

### 562. ECONOMICS OF MINERAL DEPOSITS

Spring term. Credit three hours. Prerequisites, Geology 461 and 462; recommended, Geology 561. M W F 10:10. Assigned problems. Mr. Clark. Alternate-year course. Offered in 1967-68.



Sampling and ore estimation. Cutoff, grade, tonnage and economic factors related to mining and mineral marketing. Financial calculations and procedures used in mineral property valuation.

[582. EXPLORATION GEOLOGY]

Not offered in 1967-68.

Spring term. Credit three hours. Recommended for all graduate students in geological sciences. Prerequisites, graduate standing and field geology. Lectures, M W 9:05. Laboratory, W 2-4:25. Messrs. Philbrick and Kiersch. Alternate-year course.

## Geobiology

### PALEONTOLOGY AND STRATIGRAPHY

#### 471. INVERTEBRATE PALEONTOLOGY

Fall term. Credit four hours. Prerequisites, Geology 102, and, if possible, invertebrate zoology. For those interested in fossil evidence of the development of organisms. Lectures, T Th 10:10. Laboratory, W Th 2-4:25. Mr. Cole.

Paleobiology and classification of important fossil invertebrates.

#### 472. PRINCIPLES OF HISTORIC GEOLOGY

Spring term. Credit four hours. Prerequisites, Geology 322 and 471. Lectures, T Th 10:10. Laboratory, W 2-4:25, and additional assigned problems. Mr. Wells.

Application of geologic principles to interpretation of earth history: development of the geologic column; geochronology and geochronometry; correlation and the zone concept; sedimentary environments and provinces; geosynclines and platforms; problems of the Pre-Cambrian and continental evolution.

#### [571. STRATIGRAPHY: PALEOZOIC]

Not offered in 1967-68.

Fall term. Credit three hours. Prerequisite, Geology 472. Lectures, T Th 9:05 and W 7:30 p.m. Mr. Wells.

#### 572. STRATIGRAPHY: MESOZOIC AND CENOZOIC

Spring term. Credit three hours. Prerequisite, Geology 472. Lectures, T W Th 9:05. Messrs. Cole and Wells.

Principles of stratigraphy developed by detailed study of selected American and European systemic examples.

#### 671. MICROPALAEONTOLOGY

Spring term. Credit two hours. Prerequisite, Geology 472, 572. Lecture, W 9:05. Laboratory, W 2-4:25, and additional assigned problems. Mr. Cole.

Microfossils, chiefly Foraminifera.

#### 672. STRATIGRAPHY OF NEW YORK STATE

Spring term. Credit three hours. Prerequisite, Geology 571. Lectures, T Th 12:20 early in the term, followed by all-day and weekend field trips. Mr. Wells. Alternate-year course. Offered in 1967-68.

The classic Paleozoic sections of New York studied through lectures, readings, and field observation.

## Seminars and Special Work

### 673. SEMINAR IN THE HISTORY OF GEOLOGY

Fall term. Credit two hours. Hours to be arranged. Mr. Wells.

Part of the graduate program in the history of science.

### SEMINAR IN GEOLOGICAL SCIENCES

Each term. No credit. For majors and required of graduate students, but open to all who are interested. T 4:45. Staff and visiting lecturers.

Reports and discussion of current research in the geological sciences.

### 690. SPECIAL WORK

Throughout the year. Credit two hours a term. Prerequisite, consent of the instructor. Staff.

Advanced work or original investigations in geological sciences on the graduate level.

690a. Analytical geochemistry, crystallography, and mineralogy: Mr. Chang.

690b. Volcanic petrology and geochemistry: Mr. LeMasurier.

690c. Coastal geomorphology and Pleistocene Geology: Mr. Bloom.

690d. Engineering geology, geomechanics, and hydrogeology: Mr. Kiersch.

690e. Invertebrate paleontology and geomorphology: Mr. Cole.

690f. Invertebrate paleontology and paleoecology: Mr. Wells.

690g. Sedimentology and primary structures. A special lecture seminar by Mr. E. D. McKee, fall term. Credit one hour. Hours to be arranged.

690h. Physical and engineering geology, water resources: Mr. Philbrick.

690i. Mineral deposits and resources, geophysics: Mr. Clark.

## GERMAN LITERATURE

Mr. O. J. Matthijs Jolles, Chairman; Messrs. E. A. Blackall, D. Connor, J. W. Marchand, J. B. Dallett, H. Deinert, Mrs. Else Fleissner, Mrs. Eleonore Frey, Messrs. A. Muschg, B. E. Pike, and Staff.

For complete course listings and for details of the major, see the heading "German" under *Modern Foreign Languages and Literatures*.

## GOVERNMENT

Mr. W. F. Berns, Chairman; Messrs. B. R. Anderson, D. E. Ashford, A. D. Bloom, H. W. Briggs, A. T. Dotson, M. Einaudi, A. Hacker, R. I. Hofferbert, G. McT. Kahin, E. G. Kenworthy, R. J. Landry, J. M. Lewis, J. W. Lewis, D. P. Mozingo, S. Muller, C. Rossiter, A. W. Rovine, M. Rush, A. P. Sindler.

For a major in government the following courses must be completed: (1) Government 101, Government 104, and Government 203; (2) a minimum of 24 additional hours in the Department at 300 or above; (3) in related subjects, a minimum of 12 hours selected with the approval of the adviser from courses numbered 300 or above in anthropology, eco-

nomics, history, philosophy, and sociology. Of the related hours, at least six must be in history.

Juniors and seniors majoring in the Department of Government who have a grade of B or better in one half of the hours they have passed may take supervised study in government. Consent of the instructor is required.

Candidates for the degree of Bachelor of Arts with Honors in Government will complete Government 101, 104, 203, and a minimum of 24 additional hours of work in the Department, including Government 492, 493, and 494, as well as 12 hours in related subjects.

Students seeking admission to the Department's Honors program must file applications on forms obtainable from the departmental secretary by November 15 of their junior year. Applications should be submitted only by students who have a cumulative average of B+ or better in all courses completed in the Department, or who can present evidence of exceptional promise.

The Distribution requirement in social sciences is satisfied in government by taking two of the following three courses: Government 101, 104, and 203.

## Introductory Courses

### 101. AMERICAN GOVERNMENT

Fall term. Credit three hours. Open to all students (with first preference for students in the College of Arts and Sciences). Lectures, T Th 1:25. Discussion sections, Th 2:30; F 10:10, 11:15, 1:25, 2:30; S 10:10, 11:15. Messrs. Berns, Hacker, and Staff.

A general introduction to American national government and politics.

### [101. AMERICAN GOVERNMENT]

Not offered in 1967-68.

Spring term. Credit three hours. Primarily for students who are not in the College of Arts and Sciences. Lectures, T Th 9:05. Discussion sections, Th 2:30; F 8, 11:15.

### 104. COMPARATIVE GOVERNMENT

Spring term. Credit three hours. Open to all students. Lectures, T Th 2:30. Discussion sections, Th 3:35; F 10:10, 11:15, 1:25, 2:30; S 10:10, 11:15. Messrs. Einaudi, Anderson, and Staff.

A comparative study of major contemporary political movements and of governmental institutions and processes. Great Britain, France, Germany, Russia, as well as some of the newly emerging countries, will provide the materials for the discussion of key issues.

### 203. INTRODUCTION TO POLITICAL THEORY

Fall term. Credit three hours. Open to all students. Prerequisite, Government 101 and 104, or consent of the instructor. Lectures, M W 11:15. Discussion sections to be arranged. Mr. Bloom.

A survey of the development of western political theory from Plato to the present. Readings from the work of the major theorists and an examination of the relevance of their ideas to contemporary politics will be stressed.

## FRESHMAN SEMINARS

As part of the Freshman Humanities Program, the Department of Government will offer the following two courses. Since they are equivalents of Government 101 and 104 they may be counted toward the major.

### 101S. AMERICAN GOVERNMENT

Spring term. Credit three hours. Mr. J. M. Lewis.

A seminar version of Government 101. (See above, or see Freshman Humanities Program, page 26.)

### 104S. COMPARATIVE GOVERNMENT

Fall term. Credit three hours. Messrs. Kenworthy and Mozingo.

A seminar version of Government 104. (See above, or see Freshman Humanities Program, page 26.)

## MAJOR SEMINARS

### 300. MAJOR SEMINARS

Either term. Credit four hours. Times to be arranged. Messrs. Anderson, Einaudi, Hacker, Hofferbert, Kenworthy, Landry, Lewis, Mozingo, Rovine, Rush, Schaffer, and Sindler.

Every major in the department is encouraged to take at least one major seminar during his junior and senior years. The topics of the seminars and the names of the professors offering them each semester will be announced prior to the registration period. Majors should, when registering with their advisers, indicate their preferential choices among the seminars being offered. Non-majors may be admitted as space is available and should apply through the department's secretary.

### [312. URBAN POLITICS]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, Government 101 or consent of the instructor. T Th 10:10. Discussion sections, M 9:05, 10:10, 11:15.

### 313. AMERICAN CONSTITUTIONAL LAW

Fall term. Credit four hours. Open to juniors and seniors only. Prerequisite, Government 101. T Th S 10:10. Mr. Berns.

A study of the law of the Constitution as this has been expounded by the Supreme Court. Emphasis will be placed on the various understandings of freedom that have inspired, or given rise to, that law. The course will be conducted primarily through class discussion of assigned cases.

### 314. POLITICS AND SOCIETY

Spring term. Credit three hours. Prerequisite, Government 101. T Th S 11:15. Mr. Hacker.

An analysis of the social institutions and patterns of behavior that contribute to the shaping of American political life.

### 316. THE AMERICAN PRESIDENCY

Spring term. Credit three hours. No prerequisite, but Government 101 and History 215-216 are recommended preliminary courses. T Th S 10:10. Mr. J. M. Lewis.

Analysis of the office and powers of the President, with emphasis on his activities as administrator, diplomat, commander, legislator, politician, and

head of state. The lives and accomplishments of the important Presidents are studied at length.

### 317. AMERICAN POLITICAL PARTIES

Fall term. Credit three hours. Prerequisite, Government 101. M W F 10:10. Mr. Sindler.

The nature and operation of American national and state party systems and politics, related to the broad setting of the governmental system and prevailing political values.

### 318. THE AMERICAN CONGRESS

Spring term. Credit four hours. Open to sophomores, juniors, and seniors. Prerequisite, Government 101. M T 1:25. Mr. Fenno.

An intensive study of politics and policy formation in Congress. Special emphasis on the problems of the representative assembly in the twentieth century.

### 320. MINORITY GROUP POLITICS

Spring term. Credit four hours. Prerequisite, Government 101. M W F 10:10. Mr. Sindler.

The behavior of ethnic, religious, and racial minorities in politics, elections, and interest group activity. Special attention will be given to Negro political life in both the North and the South.

### [323. PUBLIC ADMINISTRATION: THE FOURTH BRANCH]

Not offered in 1967-68.

Fall term. Credit three hours. Prerequisite, Government 101 or consent of instructor. M W F 9:05. Mr. Dotson.

### 325. AMERICAN STATE POLITICS

Fall term. Credit three hours. Prerequisite, Government 101. Open to juniors and seniors. M W F 12:20. Mr. Hofferbert.

A study of the relationships between the social setting, patterns of partisanship, and governmental processes in the American states.

### 326. POLITICS AND POLICY MAKING IN THE AMERICAN COMMUNITY

Spring term. Credit four hours. Prerequisite, Government 101. Open to juniors and seniors. M W F 12:20. Mr. Hofferbert.

An analysis of the processes of political decision making in communities of varying size and social composition. Special attention is given to the relationship between formal governmental institutions and informal structures of political influence.

## Comparative Government

### 333. GOVERNMENT AND POLITICS OF THE SOVIET UNION

Fall term. Credit four hours. Open to juniors and seniors. Prerequisite, Government 104 or consent of the instructor. M W F 12:20. Mr. Rush.

An introduction to the Soviet political system.

### 336. POLITICAL ATTITUDES AND PARTICIPATION

Fall term. Credit four hours. Open to sophomores, juniors, and seniors.

Prerequisite, Government 101 or 104 or consent of the instructor. T Th 9:05 and a third hour to be arranged. Mr. Ashford.

A comparative analysis of participation and involvement in the political process at the local level in United States, and in selected European and developing countries. An analysis of attitudinal and personality factors as they relate to political life in the community.

### 338. POLITICS AND MODERNIZATION

Fall term. Credit four hours. Open to juniors and seniors. T Th S 11:15. Mr. Schaffer.

A comparative study of political development and social change.

### 340. GOVERNMENT AND POLITICS OF LATIN AMERICA

Spring term. Credit four hours. Prerequisite, Government 104. M W F 1:25. Mr. Kenworthy.

A general introduction to problems of political analysis in this region, focusing upon the distribution of national power and its relationship to the nominally political institutions.

### [341. CONSTITUTIONAL GOVERNMENT IN EUROPE]

Not offered in 1967-68.

Fall term. Credit four hours. Open to juniors and seniors. Prerequisite, Government 104. T Th 2:30-4. Mr. Einaudi.

### 343. GOVERNMENT AND POLITICS IN THE COMMONWEALTH

Fall term. Credit four hours. Prerequisite, Government 104. M W F 2:30. Mr. Anderson.

An analysis of constitutional development in the member states of the Commonwealth.

### 344. GOVERNMENT AND POLITICS OF SOUTHEAST ASIA

Fall term. Credit four hours. Prerequisite, Government 104 and Government 377 or consent of the instructor. T Th S 9:05. Mr. Anderson.

Analysis of the organization and functioning of government and politics in the countries of Southeast Asia, with attention given to the nature of the social and economic environments which condition them.

### 347. CHINESE GOVERNMENT AND POLITICS

Fall term. Credit four hours. Prerequisite, Government 104. M W F 10:10. Mr. J. W. Lewis.

General introduction to the politics of modern China with particular emphasis on the political processes of the People's Republic of China.

## Political Theory

### 351. DEVELOPMENT OF MODERN POLITICAL THOUGHT

Fall term. Credit four hours. Open to juniors and seniors. Lectures, T Th 11:15. Discussion sections Th 1:25, 2:30; F 1:25, 2:30. Mr. Einaudi.

The development of political thought from the sixteenth to the nineteenth century. The course is built around certain essential concepts of political theory: the nature of law, the state and sovereignty, individual rights and the community. Machiavelli, Hobbes, the Enlightenment, Rousseau, Hegel, and Marx will receive particular attention.

**[355. AMERICAN POLITICAL THOUGHT]**

Not offered in 1967-68.

Fall term. Credit four hours. Open to juniors and seniors. Prerequisite, Government 101, Government 203, and History 215, or consent of the instructor. T Th S 11:15. Mr. Rossiter.

**462. ORIGINS OF WESTERN POLITICAL THOUGHT**

Spring term. Credit four hours. Prerequisites, consent of instructor and Government 203 or a major in classics. M W F 11:15. Mr. Bloom.

A survey of the classical political teachings in their development from the pre-Socratics through Greek and Roman antiquity and in their transformation by the revealed religions.

**464. BASIC PROBLEMS IN POLITICAL THEORY**

Spring term. Credit four hours. Open to juniors and seniors with the consent of the instructor. T Th 2:30-4:20. Mr. Berns.

Textual analysis of the writings of selected modern political philosophers.

**INTERNATIONAL RELATIONS****334. FOREIGN POLICY OF THE U.S.S.R.**

Spring term. Credit four hours. Open to juniors and seniors. Prerequisite, Government 333 or Government 372. M W F 12:20. Mr. Rush.

A survey from the Revolution to the present.

**372. INTERNATIONAL RELATIONS**

Spring term. Credit three hours. Open to sophomores, juniors and seniors. M W F 9:05. Mr. J. W. Lewis.

An analysis of the basic issues, concepts, contents, and methods which characterize relations among states. Ideological, legal, military, and economic elements which may contribute to harmony and dissent will be discussed in terms of both international society and national foreign policies. The overall frame of reference will consist chiefly of theories, practices, and institutions developed since World War II.

**377. THE UNITED STATES AND ASIA**

Spring term. Credit three hours. No prerequisites. Open to sophomores, juniors, and seniors. M W F 2:30. Mr. Kahin.

An analysis of the relations of the United States with the major states of Asia and with those smaller countries with which it is particularly concerned; attention is also given to the relationship of American policy to the Asian policies of France, Great Britain, and Soviet Russia. Deals primarily with the period since 1945.

**381. INTERNATIONAL ORGANIZATION**

Fall term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 9:05. Mr. Briggs.

An analysis of some international governmental procedures and institutions. Particular attention will be given to the background, organization, and operation of the United Nations, with emphasis on political and legal problems.

**383. INTERNATIONAL LAW AND WAR**

Fall term. Credit three hours. Open to qualified juniors and seniors. T Th S 10:10. Mr. Rovine.

War prevention and control through international law and organization; laws of war and neutrality and efforts to minimize resort to force and international armed conflict.

### 384. THE UNITED NATIONS AND PEACEKEEPING

Spring term. Credit four hours. Open to sophomores, juniors, and seniors. T Th S 10:10. Mr. Rovine.

A history and analysis of UN efforts to maintain international peace and security. Emphasis on the politics, processes, and place in the international system of UN peacekeeping forces, and, within that context, on the UN decision-making process.

### 471-472. INTERNATIONAL LAW

Throughout the year. Credit four hours a term. Open to qualified juniors and seniors. M W F 11:15. Mr. Briggs.

A systematic study of the nature, development, and judicial application of international law. Attention will be given to the role of law in the relations of States. Cases, documentary analysis, and discussions.

### 478. THE FOREIGN POLICY OF CHINA

Spring term. Credit four hours. Open to juniors and seniors who have taken Government 347. T Th S 9:05. Mr. Mozingo.

An analysis of Chinese concepts of foreign relations and the policy making process in the People's Republic of China. Emphasis will be placed on such topics as the contemporary Chinese view of their position in the international community and a comparison of the making and implementation of contemporary Chinese policies with respect to such areas as the Soviet bloc, Afro-Asian countries, and the West.

## Honors Program

### 492. JUNIOR HONORS SEMINAR

Spring term. Credit four hours. Open only to juniors accepted as candidates for Honors in government. Hours to be arranged. Mr. Hacker.

An examination of the development and scope of the study of government, combined with training in advanced research.

### 493. SENIOR HONORS PROGRAM

Fall term. Credit four hours. Prerequisite, Government 492. Hours to be arranged. Mr. Hacker.

Supervised study with selected members of the Department.

### 494. SENIOR HONORS PROGRAM

Spring term. Credit eight hours. Prerequisite, Government 493. Hours to be arranged. Mr. Hacker.

Preparation of Honors thesis.

## Supervised Study

### 498. READINGS

Either term. Credit two hours. Any member of the department.



## 499. READINGS

Either term. Credit four hours. Any member of the department.

## Graduate Seminars

## 511. SEMINAR IN AMERICAN POLITICAL PARTIES AND ELECTIONS

Fall term. Credit four hours. Open to graduate students and to seniors by consent of the instructor. Hours to be arranged. Mr. Sindler.

## 516. SEMINAR IN CONSTITUTIONAL LAW AND JURISPRUDENCE

Spring term. Credit four hours. Open to graduate students and qualified seniors who have taken Government 313. Hours to be arranged. Mr. Berns.

## [523. SEMINAR IN THE POLITICS OF GOVERNMENT PLANNING]

Not offered in 1967-68.

Fall term. Credit four hours. Open to graduate students and qualified seniors. Hours to be arranged.

## 528. SEMINAR IN AMERICAN POLITICAL INSTITUTIONS

Spring term. Credit four hours. Open to graduate students and qualified seniors. Hours to be arranged. Mr. Fenno.

## 531. SEMINAR IN METHODS OF EMPIRICAL POLITICAL INQUIRY

Fall term. Credit four hours. Open to graduate students and qualified seniors by consent of the instructor. Hours to be arranged. Mr. Hofferbert.

## [532. SEMINAR IN AMERICAN STATE AND LOCAL POLITICS]

Not offered in 1967-68.

Spring term. Credit four hours. Open to graduate students and qualified seniors by consent of the instructor. Hours to be arranged. Mr. Hofferbert.

## 534. SEMINAR IN THE POLITICS OF THE SOVIET UNION

Spring term. Credit four hours. Open to graduate students and qualified seniors who have taken Government 333. Hours to be arranged. Mr. Rush.

## 537. SEMINAR IN POLITICAL DEVELOPMENT AND SOCIAL CHANGE

Fall term. Credit four hours. Open to graduate students and qualified seniors. Hours to be arranged. Mr. Ashford.

## [538. SEMINAR IN ADMINISTRATION AND DEVELOPMENT]

Not offered in 1967-68.

Spring term. Credit four hours. Open to graduate students and qualified seniors. Hours to be arranged. Mr. Dotson. Students are referred to B&PA 662, Mr. Bent.

## 540. SEMINAR IN LATIN AMERICAN POLITICS

Spring term. Credit four hours. Open to graduate students and qualified seniors. Hours to be arranged. Mr. Kenworthy.

[542. SEMINAR IN COMPARATIVE GOVERNMENT]

Not offered in 1967-68.

Spring term. Credit four hours. Open to graduate students and to qualified seniors. Hours to be arranged. Mr. Einaudi.

543-544. SEMINAR IN COMPARATIVE GOVERNMENT

Throughout the year. Credit four hours each term. Open to graduate students and to qualified seniors. Hours to be arranged. Mr. Muller.

545. SEMINAR IN IDEOLOGY AND POLITICAL CHANGE

Spring term. Credit four hours. Open to graduate students and to qualified seniors. Hours to be arranged. Mr. Ashford.

[547. SEMINAR IN THE POLITICS OF CHINA]

Not offered in 1967-68.

Spring term. Credit four hours. Open to graduate students and to seniors who have taken Government 347 and secured the consent of the instructor. Hours to be arranged. Mr. J. W. Lewis.

555-556. SEMINAR IN POLITICAL THEORY

Throughout the year. Credit four hours each term. Open to graduate students and to qualified seniors by consent of the instructor. Hours to be arranged. Mr. Bloom.

562. SEMINAR IN POLITICAL THEORY

Spring term. Credit four hours each term. Open to graduate students and to qualified seniors. Hours to be arranged. Mr. Einaudi.

572. SEMINAR IN INTERNATIONAL RELATIONS

Fall term. Credit four hours. Open to graduate students and qualified seniors who have taken Government 372 and secured the consent of the instructor. Hours to be arranged. Mr. J. W. Lewis.

576. SEMINAR IN INTERNATIONAL LAW AND INTERNATIONAL ORGANIZATION

Spring term. Credit four hours. Open to graduate students and law students. Hours to be arranged. Mr. Briggs.

577. SEMINAR IN THE INTERNATIONAL RELATIONS OF ASIA

Fall term. Credit four hours. Open to graduate students and qualified seniors who have taken Government 377 or Government 478 and secured the consent of the instructor. Hours to be arranged. Mr. Kahin.

[583. SEMINAR IN THE FOREIGN POLICY OF CHINA]

Not offered in 1967-68.

Fall term. Credit four hours. Open to graduate students and to seniors who have taken Government 478. Hours to be arranged.

644. SEMINAR IN POLITICAL PROBLEMS OF SOUTHEAST ASIA

Spring term. Credit four hours. Open to graduate students and qualified seniors who have taken Government 344 and secured the consent of the instructor. Hours to be arranged. Mr. Kahin.

## HISTORY

Mr. F. G. Marcham, Chairman; Messrs. K. Biggerstaff, J. F. Bosher, D. B. Davis, E. W. Fox, P. W. Gates, R. Graham, H. Guerlac, J. J. John, D. Kagan, M. Kammen, J. R. Kirkland, H. Koenigsberger, W. F. LaFeber, C. A. Peterson, W. M. Pintner, R. Polenber, J. Silbey, J. M. Smith, B. Tierney, M. Walker, L. P. Williams, and O. W. Wolters.

For admission to the history major a student must have completed an Introduction to Western Civilization, and have earned grades of C or better in this and in any other history courses taken. Students who have completed only the first semester of the Introduction to Western Civilization, with a grade of C or better, may be provisionally admitted to the major. Prospective majors should apply for admission at the Department of History office.

In fulfillment of the major requirement a student must take 28 hours of history courses numbered 200 or above. Of the 28 hours, 16 must be in courses numbered above 330, and, of these 16, eight must be in one particular field of history (e.g., American, ancient, Latin American, early modern European). To complete the major a student must also take two courses numbered 300 or above offered by other departments that relate to his eight-hour concentration in one particular field of history.

Candidates for the Bachelor of Arts with Honors in History will consult with Mr. Kammen and enroll in the Honors program. (A description of the Honors program follows the list of undergraduate courses.)

The Distribution requirement in History is satisfied by any year course in history from History 105-106 to History 323-324 inclusive.

### 105-106. INTRODUCTION TO WESTERN CIVILIZATION

Throughout the year. Credit three hours a term. For freshmen and sophomores; open to juniors and seniors by permission only. First term prerequisite to second except by permission. (M) W F 9:05. Mr. Williams and Assistants.

A survey of European history since antiquity. Attention is given equally to the major political and social developments and to the intellectual heritage of the West. A considerable portion of the reading is in contemporary sources.

### 215-216. AMERICAN HISTORY

Throughout the year. Credit three hours a term. Either term of the course may be taken separately. T Th S 9:05. Messrs. Kammen, Kirkland, Polenber, Silbey and Staff.

The course will consider two major topics each term and will make use of different modes of historical inquiry: political, constitutional, diplomatic, economic, social, and intellectual. A primary purpose will be to give the student opportunities to make his own historical judgments and analyze those made by others. These aims will be pursued largely through weekly seminar work and frequent short essays.

*Note:* Freshmen may count either term or both toward satisfaction of the Freshman Humanities requirement. (For description of the Freshman Humanities program see page 22.)

**301-302. ANCIENT HISTORY**

Throughout the year. Credit three hours a term. Open to sophomores. History 301 is not prerequisite to History 302. M W F 11:15. Mr. Kagan.

A survey of ancient history from the beginnings of civilization in the valleys of the Near East to the decline of the Roman Empire. Two lectures and one discussion period each week.

**303-304. MEDIEVAL HISTORY**

Throughout the year. Credit three hours a term. Open to sophomores. History 303 is not prerequisite to History 304. Fall term, M W F 12:20, Mr. John. Spring term, T Th S 10:10, Mr. Tierney.

A survey of the main trends of political, economic, intellectual, and religious development in Europe from the fourth to the twelfth century in the fall term, and from the twelfth to the fifteenth century in the spring term.

**307-308. ENGLISH HISTORY FROM ANGLO-SAXON TIMES TO THE PRESENT**

Throughout the year. Credit three hours a term. Open to sophomores. Course 307 is not prerequisite to 308. T Th S 11:15. Mr. Marcham.

Traces the growth of government, economic life, religion, the arts, and society among the English people. Illustrates in the history of one nation some of the principal developments of Western civilization since early modern times, such as the nation-state, the late Renaissance, the industrial revolution, the overseas empire, and state socialism. Some of the written work is designed to give elementary training in the interpretation of documentary evidence. Work for the first term ends with the civil wars of the seventeenth century.

**309. INTRODUCTION TO RUSSIAN HISTORY**

Fall term. Credit three hours. Open to sophomores. M W F 9:05. Mr. Pintner.

A survey from the earliest times until the present day. The origin and development of the autocratic state, its relationship to the major segments of the population, and the unique features of Russian culture are stressed.

**310. MAJOR PROBLEMS IN RUSSIAN HISTORY**

Spring term. Credit four hours. Open to sophomores. History 309 is desirable but not a prerequisite for students willing to do additional background reading. M W F 9:05. Mr. Pintner.

An introductory course, using a topical approach. Important problems of political, cultural, social, and economic history will be studied in some detail using primary sources and specialized secondary works. Written work and discussion sections will be an important part of the course.

**311-312. SCIENCE IN WESTERN CIVILIZATION**

Throughout the year. Credit three hours a term. Open to sophomores. Prerequisite, one year of college science. History 311 or consent of the instructor prerequisite to History 312. M W F 10:10. Mr. Williams.

A survey of the development of science in its relation to the main currents of European and American civilization from classical antiquity to the present day.

**319. LATIN AMERICAN HISTORY IN THE COLONIAL PERIOD**

Fall term. Credit three hours. Open to sophomores. M W F 9:05. Mr. Graham.

A survey of the colonial period from the discovery of America to the wars

of independence. Particular emphasis is placed on the following topics: the relationship of Spaniards and Indians; political, economic, and social institutions; intellectual and artistic achievements; and the distinctions between the Portuguese and Spanish colonial experience.

### 320. LATIN AMERICAN HISTORY SINCE INDEPENDENCE

Spring term. Credit three hours. Open to sophomores. M W F 9:05. Mr. Graham.

A survey of the nineteenth and twentieth centuries using a topical approach. Attention focuses upon political characteristics, economic developments, social change, and the influence of these factors upon intellectual life and international relations. Mexico, Brazil, and Argentina receive most emphasis.

### 323. HISTORY OF CHINESE CIVILIZATION PRIOR TO THE NINETEENTH CENTURY

Fall term. Credit three hours. Open to sophomores. T Th S 10:10. Mr. Peterson.

A rapid survey of Chinese history from the earliest times until the establishment of formal relations with the West.

### 324. HISTORY OF CHINESE CIVILIZATION: NINETEENTH AND TWENTIETH CENTURIES

Spring term. Credit three hours. History 323 not prerequisite to History 324. Open to sophomores. T Th S 10:10. Mr. Biggerstaff.

A detailed survey of the modernization of Chinese civilization under the impact of the West. After a brief examination of early nineteenth-century China, the Western political, economic, and ideological invasion is considered, followed by a more thorough study of the revolutionary changes that have culminated in the People's Republic.

### 401. SUPERVISED READING

Either term. Credit two hours. Prerequisite: permission of the chairman of the Department. Open only to seniors with grades of B- or better in virtually all courses in the humanities and social sciences.

### 402. SUPERVISED RESEARCH

Either term. Credit four hours. Prerequisite: permission of the chairman of the Department. Open only to seniors with grades of B- or better in virtually all courses in the humanities and social sciences.

### [431. THE ROMAN REPUBLIC, 133-30 B.C.]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, History 302 or consent of the instructor. Mr. Kagan.

### 432. GREEK HISTORY, 500-336 B.C.

Spring term. Credit four hours. Prerequisite, History 301 or consent of the instructor. M W 1:25-3:20. Mr. Kagan.

### [433. THE ROMAN EMPIRE, 30 B.C.-A.D. 180]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, History 302 or consent of the instructor. Mr. Kagan.

434. HELLENISTIC AGE

Fall term. Credit four hours. Prerequisite, History 301-302 or consent of the instructor. M W 1:25-3:20. Mr. Kagan.

335. MEDIEVAL CULTURE, 400-1150

Spring term. Credit four hours. Prerequisite, History 303-304 or consent of the instructor. T Th 1:25-3:20. Mr. John.

[336. MEDIEVAL CULTURE, 1150-1300]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, History 303-304 or consent of the instructor. T Th S 12:20. Mr. Tierney.

437. CHURCH AND STATE DURING THE MIDDLE AGES

Fall term. Credit four hours. Prerequisite, History 303-304 or consent of the instructor. T Th S 12:20. Mr. Tierney.

[438. FRANCE IN THE HIGH MIDDLE AGES]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, History 303-304 or consent of the instructor. T Th S 12:20. Mr. Tierney.

341-342. EUROPE IN THE AGE OF THE RENAISSANCE,  
REFORMATION, AND COUNTER-REFORMATION

Throughout the year. Credit four hours a term. Prerequisite, six hours in European history or consent of the instructor. M W F 11:15. Mr. Koenigsberger.

343-344. EUROPE AND EUROPE OVERSEAS FROM 1688 TO 1783

Throughout the year. Credit four hours a term. Prerequisite, six hours in European history or consent of the instructor. T Th S 10:10. Mr. Bosher.

The topics will include economic life and the growth of trade and industry; concentrations of wealth and power; social structure and evolution; international conflict, and the Enlightenment.

442. THE SPANISH MONARCHY AND THE REVOLT OF THE  
NETHERLANDS

Spring term. Credit four hours. Prerequisite, six hours of European history and consent of the instructor. M W F 9:05. Mr. Koenigsberger.

444. THE CENTURY OF ENLIGHTENMENT

Spring term. Credit four hours. A reading knowledge of French is required. Prerequisite, six hours in European history. M W F 10:10. Mr. Guerlac.

[347. ENGLISH CONSTITUTIONAL HISTORY I: TO 1485]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, History 303-304, History 307, or consent of the instructor. T Th S 12:20. Mr. Tierney.

[348. ENGLISH CONSTITUTIONAL HISTORY, II: SINCE 1485]

Not offered in 1967-68.

Spring term. Credit four hours a term. Prerequisite, History 307-308, History 347 or consent of the instructor. T Th S 9:05. Mr. Marcham.

449. HISTORY OF ENGLAND UNDER THE TUDORS AND STUARTS  
Spring term. Credit four hours. Prerequisite, History 307-308 or consent of the instructor. T Th S 9:05. Mr. Marcham.

[450. HISTORY OF ENGLAND IN THE NINETEENTH AND TWENTIETH CENTURIES]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, History 307-308 or consent of the instructor. T Th S 9:05. Mr. Marcham.

351. EUROPE IN THE NINETEENTH CENTURY

Fall term. Credit four hours. Prerequisite, History 106 or consent of the instructor. W F 1:25-3:20. Mr. Fox.

An intermediate level course in European history from the beginning of the French and Industrial Revolutions to 1900, stressing the influence of those two revolutions on the political and social development of European civilization. Conducted by informal lectures and discussions, it will assume some familiarity with the narrative history of the period.

352. EUROPE IN THE TWENTIETH CENTURY

Spring term. Credit four hours. Prerequisite, History 106 or 351, or consent of the instructor. W F 1:25-3:20. Mr. Fox.

An intermediate level course in European history from 1900 to the present, stressing the efforts of European states to adjust to the rapidly evolving political, economic, and technological development in Europe and the rest of the world. Conducted by lectures and discussions.

551. EVOLUTION OF THE FRENCH REPUBLIC

Spring term. Credit four hours. Open to juniors, seniors and graduate students with the consent of the instructor. A reading knowledge of French is required. T Th 3:35-5:30. Mr. Fox.

A critical survey of the politics of the Second, Third, Fourth, and Fifth Republics. There will be a consideration of different interpretations of such developments as Boulangism, the Popular Front, the Resistance, and Gaullism.

553. THE EUROPEAN REVOLUTION, 1789-1848

Fall term. Credit four hours. Open to seniors and graduate students with the consent of the instructor. A reading knowledge of French is required. T Th 3:35-5:30. Mr. Fox.

[554. THE MODERNIZATION OF EUROPE]

Not offered in 1967-68.

Spring term. Credit four hours. Open to seniors and graduate students with the consent of the instructor. Mr. Fox.

355-356. MODERN GERMAN HISTORY

Throughout the year. Credit four hours a term. Either term may be taken independently and without prerequisite. T Th S 10:10. Mr. Walker.

The fall term will deal with the period 1648-1848; the spring term, with the period 1848 to the present.

457. THE PROBLEMS OF GOVERNMENT IN THE ANCIEN REGIME

Fall term. Credit four hours. Prerequisite, History 343-344 or consent of the instructor. T Th S 12:20. Mr. Boshier.

**461. ECONOMIC AND SOCIAL HISTORY OF RUSSIA**

Fall term. Credit four hours. Prerequisite, History 309 or permission of the instructor. M 1:25-2:15, W 1:25-3:20. Mr. Pintner.

Emphasizes the role of the peasantry throughout the entire course of Russian history, from the Kievan period to the present day. Special attention will be devoted to the various methods used by the state in the economic exploitation and political control of the population.

**462. HISTORY OF RUSSIAN FOREIGN RELATIONS FROM THE FIFTEENTH CENTURY**

Spring term. Credit four hours. Prerequisite, History 309 or permission of the instructor. M 1:25-2:15, W 1:25-3:20. Mr. Pintner.

Deals with the nature of Russia's relationships with other powers, particularly with the question of to what extent these relationships have changed in the past 500 year.

**466. ORIGINS OF MODERN SCIENCE: THE CHEMICAL REVOLUTION**

Fall term. Credit four hours. Prerequisite, History 311-312 or consent of the instructor. T Th S 9:05. Mr. Crosland.

Reading and discussion of scientific classics important for understanding the chemical revolution of the eighteenth century.

**[467. INTELLECTUAL CURRENTS OF THE SEVENTEENTH CENTURY]**

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, History 311-312 or consent of the instructor. Mr. Guerlac.

**[369-370. SCIENCE SINCE 1850]**

Not offered in 1967-68.

Throughout the year. Credit four hours a term. Prerequisite, either an intense interest in the history of modern science (see the instructor) or two years of college science. Course 369 is not prerequisite to 370. Mr. Williams.

**371. COLONIZATION FROM ANTIQUITY UNTIL THE EIGHTEENTH CENTURY**

Fall term. Credit four hours. M W F 9:05. Mr. Kammen.

An examination of why and how societies at certain points in time developed colonies overseas. Particular attention will be given to the relationship between social structure and the sources of colonization; theories of colonization; relations between colonizers and native peoples; colonization and entrepreneurship, economic nationalism and the transfer of cultural institutions. After considering colonization in the ancient Mediterranean world, the Orient, and northern Europe in the Middle Ages, more than half of the course will be devoted to the great age of European colonization in the sixteenth, and seventeenth centuries.

**372. THE COLONIAL PERIOD OF AMERICAN HISTORY, 1607-1763**

Spring term. Credit four hours. M W F 9:05. Mr. Kammen.

The colonial origins of American society, with emphasis on the emergence of distinctive institutions, attitudes, and social patterns.

**373-374. THE STRUCTURE OF AMERICAN POLITICAL HISTORY**

Throughout the year. Credit four hours a term. History 373 is not a prerequisite to History 374. T Th S 10:10. Mr. Silbey.



A systematic examination of the patterns of American politics since 1789, focusing on decision making, popular and legislative voting behavior, and the role of interest groups, political parties and political elites in shaping our political history.

[470. THE UNITED STATES IN THE MIDDLE PERIOD, 1815-1850]

Not offered in 1967-68.

Fall term. Credit four hours. T Th 10:10. Mr. Silbey.

[471. PROBLEMS IN AMERICAN POLITICAL HISTORY]

Not offered in 1967-68.

Spring term. Credit four hours. Th 1:25-3:20. Mr. Silbey.

472. UNDERGRADUATE SEMINAR IN EARLY AMERICAN HISTORY

Spring term. Credit four hours. Permission of the instructor is required.

T 1:25-3:20. Mr. Kammen.

Topic for 1968: Patterns of colonization and the origins of representative government in British North America.

473. AGE OF THE AMERICAN REVOLUTION, 1763-1783

Fall term. Credit four hours. M W F 1:25. Mr. Smith.

The transformation of the English colonies into the new American nation. The Old Colonial System and the new politics, the concepts of constitutionalism and sovereignty, the War for Independence, republicanism and democratic thought.

474. THE NEW NATION, 1783-1815

Spring term. Credit four hours. M W F 1:25. Mr. Smith.

An analysis of the origins and establishment of the first new nation, from the American Revolution to the "era of good feelings." The Confederation period, the organization of republican government under the federal Constitution, the rise of the party system, and the interplay between domestic politics and foreign policy.

[475. AMERICAN HISTORY FROM 1877 TO 1912]

Not offered in 1967-68.

Fall term. Credit four hours. No prerequisite, but History 216 and Government 101 are strongly recommended as preliminaries. T Th S 9:05. Mr. LaFeber.

[376. AMERICAN CULTURAL AND INTELLECTUAL HISTORY, 1600-1820]

Not offered in 1967-68.

Credit four hours. M W F 10:10. Mr. Davis.

377. AMERICAN CULTURAL AND INTELLECTUAL HISTORY 1820-1890

Fall term. Credit four hours. M W F 10:10. Mr. Davis. No prerequisite, but some background in nineteenth-century history and literature is taken for granted.

Topics include ante-bellum challenges to laissez-faire liberalism, romanticism in politics and culture, the impact of evolutionary thought, ferment and reorientation in philosophy and social theory.

378. AMERICAN CULTURAL AND INTELLECTUAL HISTORY,  
1890 TO THE PRESENT

Spring term. Credit four hours. M W F 10:10. No prerequisite, but some background in twentieth-century history and literature is taken for granted, and it is recommended that History 377 be taken before History 378. Mr. Davis.

Topics include the response to science and technology, the erosion of traditional liberalism, and the continuing search for a new synthesis.

478. THE AMERICAN REFORM IMPULSE, 1800-1860

Spring term. Credit four hours. Open to upperclassmen and graduate students. M W F 1:25. Mr. Davis.

Major emphasis will fall on abolitionism, women's rights, temperance, and prison reform. Specific reform movements will be related to changes in religion and social philosophy. Some attempt will be made to show the relevance of antebellum reforms to later reform movements of farmers and laborers, Progressives, New Dealers, and antisegregationists. Research paper and considerable reading in primary sources.

SEMINAR IN AMERICAN STUDIES

(American Studies 401-402)

Fall term, Mr. Davis. Spring term, Mr. Elias.

379. AMERICAN HISTORY FROM 1890-1917

Fall term. Credit 4 hours. T Th S 12:20. Mr. Polenberg.

The response to industrialism, the labor movement and socialism, immigration and nativism, the Negro in the new south, the Populist movement, the rise of the city, imperial expansion, the Progressive era and World War I.

480. UNDERGRADUATE SEMINAR IN RECENT AMERICAN HISTORY

Spring term. Credit four hours. Permission of the instructor is required. Hours to be arranged. Mr. Polenberg.

Topic for 1968: The era of Franklin D. Roosevelt.

[380-381. RECENT AMERICAN HISTORY, 1917 TO THE PRESENT]

Not offered in 1967-68.

Throughout the year. Credit four hours a term. T Th S 12:20. Mr. Polenberg.

375. THE AMERICAN CIVIL WAR AND RECONSTRUCTION

Spring term. Credit four hours. M W F 10:10. Mr. Kirkland.

An analysis of the factors leading to the break-up of the union, the conduct of the war by the North and South, and the problems of restoring the seceded states to the union.

476. THE SOUTH AND THE NATION SINCE THE CIVIL WAR

Fall term. Credit four hours. M W F 10:10. Mr. Kirkland.

Intellectual currents and political, social, and economic trends in the South since the Civil War which have created and sustained an egocentric sectionalism within the region. Emphasis will be placed on the effect such continuing regionalism has had on the course of national history.

[477. THE PROBLEMS OF RECONSTRUCTION, 1865-1876]

Not offered in 1967-68.

Credit four hours. Admission by consent of instructor only. Mr. Kirkland.

The road to reunion: political, constitutional, economic, and social issues arising out of the attempt to restore the southern states to the union.

#### 481-482. AMERICAN HISTORY: HISTORY OF THE WEST

Throughout the year. Credit four hours a term. The first term is not prerequisite to the second. M W F 12:20. Mr. Gates.

Western migration, Indian policies, internal improvements, transportation, agriculture, growth of democracy and nationalism, land problems, conservation, federal and state relations. The major part of the work will be a research paper.

#### 383-384. HISTORY OF AMERICAN FOREIGN RELATIONS

Throughout the year. Credit four hours a term. T Th S 11:15 Mr. McCormick.

A survey of American foreign policy, 1750 to the present. Special emphasis is placed on the domestic, economic, political, and social changes and how these changes influence the formulation of American foreign policy. The first semester covers the period to 1901. A term paper is optional for all students who receive a C or above on the six weeks' examination.

#### [486. MOTIVATIONS OF AMERICAN FOREIGN POLICY]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, consent of the instructor. Mr. LaFeber.

#### [487. MEXICO IN THE TWENTIETH CENTURY]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, History 319-320 or consent of the instructor. M W F 11:15. Mr. Graham.

#### 488. BRAZIL SINCE INDEPENDENCE

Spring term. Credit four hours. Prerequisite, History 319 or 320 or consent of the instructor. M W F 11:15. Mr. Graham.

The political, economic, and social history of Brazil since 1808 with special attention to particular problems requiring critical examination in the light of alternative interpretations. Requirements include active participation in discussions as well as oral reports based on term papers and shorter essays.

#### 489. LATIN AMERICA IN THE ERA OF INDEPENDENCE

Fall term. Credit four hours. Prerequisite, History 319 or 320 or consent of the instructor. A reading knowledge of Spanish or Portuguese is recommended. M W F 11:15. Mr. Graham.

An examination of Latin American history from 1750 to 1850 with major emphasis on the independence movements. Attention will be devoted first, to the external and internal causes of independence; then, to the independence movements in Mexico, northern South America, southern South America, and Brazil; and finally, to the elaboration of nationhood in the resulting republics. Social, economic, and intellectual factors will be given as much importance as political ones.

#### 492. CHINESE HISTORY: T'ANG AND SUNG PERIODS

Spring term. Credit four hours. Prerequisite, History 323 or consent of the instructor. T Th 1:25-3:20. Mr. Peterson.

Analytic study of the evolution of Chinese society between the seventh and thirteenth centuries.

## 593-594. MODERNIZATION OF CHINA

Throughout the year. Credit four hours a term. Prerequisite, History 324 with a grade of B or better or permission of the instructor. 593 prerequisite to 594. Conducted as a seminar. M 3:35-5:30. Mr. Biggerstaff.

Topical study of the impact of Western civilization upon traditional China and of the changes in China during the first half of the twentieth century.

## 495. SOUTHEAST ASIAN HISTORY TO THE FOURTEENTH CENTURY

Fall term. Credit four hours. T Th S 11:15. Mr. Wolters.

## 496. SOUTHEAST ASIAN HISTORY FROM THE FIFTEENTH CENTURY

Spring term. Credit four hours. Prerequisite, History 495 or consent of the instructor. T Th S 11:15. Mr. Wolters.

## The Honors Program in History

Students wishing to enroll in the Honors program in history will consult with Mr. Kammen. The minimum requirements for admission to candidacy for Honors are (1) a cumulative average of B- or better in all courses; (2) a cumulative average of B or better in courses in the humanities and social sciences; (3) enrollment and outstanding performance in at least one history course before the spring term of the sophomore year.

An Honors candidate will take the history proseminar (History 399) during the fall semester of his junior year. In the spring he will take at least one advanced history course entailing frequent discussions and considerable writing under supervision. A candidate will usually have three options in the fall term of his senior year: (1) to take a course of directed reading or research (History 401 or 402); (2) to participate in a tutorial group under the direction of his major adviser; or (3) to take a graduate seminar. Whichever alternative is chosen, the student should begin to focus on a problem or body of material that will prepare him for writing the Honors essay in the spring (History 499).

The text of the Honors essay may not exceed 60 pages except by permission of the chairman of the Honors committee and the student's adviser. Two copies will be due during the first week of May. One copy will be returned with the readers' comments. Later in May, each Honors candidate will be given a thirty-minute oral examination, administered by his major adviser and one or both of the essay readers. The exam will ordinarily be concerned with the broad field of the essay (e.g. Periclean Athens, seventeenth-century science, nineteenth-century France).

The purpose of the Honors program is to give unusually able students an opportunity to do independent work under close faculty supervision. The progression of special courses taken during the junior and senior years (from History 399 through 499) all may be counted toward the 28 hours in history required of a major. Evidence to be considered in awarding the Bachelor of Arts with Honors in History will include (1) grades earned in all history and related courses; (2) readers' reports on the Honors essay; and (3) performance on the senior oral examination.

## 399. HONORS PROSEMINAR

Fall term. Credit three hours. Open only to juniors who have been accepted by the Department as candidates for Honors in history. Th 1:25-3:20. Mr. Walker.

Historical criticism and historical composition from different kinds of evidence, methods of research, and modes of explanation, in preparation for further work in the Honors program.

#### 499. HONORS GUIDANCE

Spring term. Credit four hours a term. Prerequisite, History 399.

## Graduate Seminars

#### 501. INTRODUCTION TO HISTORICAL THEORY AND PRACTICE

Fall term. Credit four hours. Required of all entering graduate students in history (exemption may be granted by the instructor to students who have already completed a satisfactory equivalent). Not open to undergraduates. T Th 3:35-5:30. Mr. John.

Problems of historical thought, research, and writing as illustrated by historians representative of various cultures, periods, and schools. Intensive supervision in the preparation of a term paper.

#### 511-512. SUPERVISED READING

Throughout the year. Credit four hours a term. Hours to be arranged. For graduate students only. Staff.

#### 591. CHINESE HISTORIOGRAPHY

Fall term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Peterson.

#### 631-632. SEMINAR IN ANCIENT HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Kagan.

#### 637-638. SEMINAR IN MEDIEVAL HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Tierney.

#### 639-640. SEMINAR IN LATIN PALEOGRAPHY

Throughout the year. Credit four hours a term. First term prerequisite to the second. Hours to be arranged. Mr. John.

#### 641-642. SEMINAR IN REVOLUTIONS OF THE MID-SEVENTEENTH CENTURY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Koenigsberger.

#### 647-648. SEMINAR IN TUDOR AND STUART HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Marcham.

#### 649-650. SEMINAR IN THE FRENCH REVOLUTION

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Boshier.

#### 651-652. SEMINAR IN MODERN EUROPEAN HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Fox.

657-658. SEMINAR IN MODERN GERMAN HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Walker.

661-662. SEMINAR IN RUSSIAN HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Pintner.

665-666. SEMINAR IN THE HISTORY OF EARLY MODERN SCIENCE

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Guerlac.

667-668. SEMINAR IN THE HISTORY OF SCIENCE DURING THE NINETEENTH AND TWENTIETH CENTURIES

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Williams.

671-672. SEMINAR IN EARLY AMERICAN HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Smith.

675-676. SEMINAR IN AMERICAN CULTURAL AND INTELLECTUAL HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Davis.

678-674. SEMINAR IN AMERICAN POLITICAL HISTORY AND THE ANTEBELLUM PERIOD

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Silbey.

677-678. SEMINAR IN THE AMERICAN CIVIL WAR RECONSTRUCTION

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Kirkland.

679-680. SEMINAR IN THE HISTORY OF THE AMERICAN WEST

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Gates.

683-684. SEMINAR IN THE HISTORY OF AMERICAN FOREIGN RELATIONS

Throughout the year. Credit four hours a term. Hours to be arranged. Mr. McCormick.

685-686. SEMINAR IN RECENT AMERICAN HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Polenberg.

[687-688. SEMINAR IN LATIN AMERICAN HISTORY]

Not offered in 1967-68.

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Graham.

691-692. SEMINAR IN MEDIEVAL CHINESE HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Peterson.

## 693-694. SEMINAR IN MODERN CHINESE HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Biggerstaff.

## 695-696. SEMINAR IN SOUTHEAST ASIAN HISTORY

One or two terms. Credit four hours a term. Hours to be arranged. Mr. Wolters.

## HISTORY OF ART

Mr. M. W. Young, Chairman; Mrs. LeGrace Benson, Messrs. T. M. Brown, R. G. Calkins, Mrs. Esther Dotson, Messrs. A. G. Griswold, H. P. Kahn, W. C. Lipke, S. J. O'Connor, A. S. Roe, K.-L. Selig, J. H. Turnure, F. O. Waage.

Students who wish to major in the history of art should plan to have completed two courses in the Department of the History of Art by the end of their sophomore year. Students who have taken only one course may also petition to major in the Department if that course is at the 200 level or above and is completed with a grade of C or better. Students should also have completed the Distribution requirement, preferably meeting the requirement in history with one of the following year courses in European history: 105-106, 301-302, 303-304.

In their junior and senior years, majors shall fulfill the following requirements: at least 30 additional hours of courses at the 300 or 400 level chosen from those listed below, and a minimum of two additional courses at a comparable level, which may be further departmental offerings, or in some related area approved by the student's major adviser. Courses at the 200 or 300 levels taken in the Department during the freshman or sophomore years may be counted toward the major providing such courses are in addition to the two courses offered in satisfaction of the prerequisite to the major. Majors are encouraged to take studio courses in painting and sculpture offered by the Department of Art in the College of Architecture, but such courses will be considered electives and cannot be counted toward the 30 hours in the major requirement in history of art.

A student who wishes to become a candidate for the degree of Bachelor of Arts with Honors in the History of Art may indicate his intention any time during his junior year to his major adviser. In order to become eligible for the Honors program, the student must have a cumulative average of at least B— and an average of B or better for courses in the Department of the History of Art. In his senior year, he will include among the regular requirements the course 493-494, involving the preparation of a senior thesis under the supervision of a faculty member.

The Distribution requirement in expressive arts is satisfied in the history of art by a combination of 103 with any course at the 200 or 300 level (not necessarily in sequence), or by 201-202.

## Introductory and General Courses

### 103. ANALYSIS OF WORKS OF ART

Either term. Credit three hours. Fall term, M W F 9:05, 10:10, 11:15, 12:20; T Th S 9:05, 10:10, 11:15. Spring term, M W F 9:05, 10:10, 11:15; T Th S 9:05, 10:10, 11:15. Mr. O'Connor (Director, Fall term), Mrs. Benson (Director, Spring term), Mrs. Dotson, Messrs. Brown, Calkins, Lipke, and Assistants.

An introduction to the problems of experiencing works of art. Students will meet in small groups of twenty or less for discussion and examination of works of art, largely through reproductions but with occasional museum study, in order to provide training in the techniques of visual analysis. A number of short papers will be assigned throughout the term, but emphasis will be placed on classroom participation and on articulation of the visual experience.

Conceived as a preparation for the study of art history, the course will not, however, approach works of art in the usual historical context. The course may also be regarded as of general interest with application outside the field of art history. The student in the College of Arts and Sciences may count it in partial fulfillment of either the Freshman Humanities requirement or the Distribution requirement (but not both). For description of the Freshman Humanities Program see page 22.

### 201-202. INTRODUCTION TO WESTERN ART

Throughout the year. Three credit hours a term. M W F 12:20. Mr. Turnure.

Intended to foster an understanding of a wide range of material by concentrating on selected examples of painting, sculpture, and architecture of the highest quality. The lectures will follow a generally chronological pattern. The fall term will begin with man's early artistic efforts and will continue into the Renaissance. The emergence of the modern point of view from the Renaissance to the present will be discussed in the spring term. Open to freshmen and sophomores; also to upperclass students as an elective. In the spring, preference will be given to those who have taken 201, but others will be admitted if places are available.

### [ARCHITECTURE OF THE MIDDLE AGES]

(Architecture 433) (Arch.)

Not offered in 1967-68.

Fall term. Credit three hours. Mr. Calkins.

### 281. INTRODUCTION TO ASIAN ART

Spring term. Credit three hours. M W F 10:10. Mr. O'Connor.

A consideration of the major artistic achievements of India, Southeast Asia, China, and Japan, with particular reference to the aesthetic and religious principles underlying the development of the art of these countries. Attention will be focused on selected masterpieces of painting, sculpture, and architecture in order to exemplify the main stylistic and cultural trends of the most important periods. Open to freshmen and sophomores; also to upperclass students as an elective.

### 313. PREHISTORIC ART

Fall term. Credit four hours. M W F 9:05. Mr. Waage.

The evolution and diffusion of Stone Age art and artifacts in Eurasia and Africa will be presented so as to acquaint the student at the same time with



the major aspects and problems of archaeological activity in general. The time span extends from the Lower Palaeolithic period to the Metals Age civilization of the Near East.

### 314. PRIMITIVE ART: THE ART OF TRIBAL SOCIETIES

Spring term. Credit four hours. M W F 9:05. Mr. Waage.

The shaping and use of art forms to satisfy group needs in cultures where art was an indispensable element of everyday life. The lectures will cover the tribal arts of Africa; subjects for the term paper will involve also the primitive arts of Australia, the Pacific Islands, and North America.

### 321. GREEK SCULPTURE

Spring term. Credit four hours. T 1:25-3:25. Mr. Waage.

A study of the sculpture of the first culture whose artistic forms developed beyond those of the archaic stage; the causes of this advance and the factors which conditioned it. Both the Hellenic and the Hellenistic periods are covered.

### [322. ARTS OF THE ROMAN EMPIRE]

Not offered in 1967-68.

Spring term. Credit four hours. M W F 9:05. Mr. Waage.

### [331. ART OF THE MIDDLE AGES]

Not offered in 1967-68.

Spring term. Credit four hours. M W F 10:10. Mr. Calkins.

### 342. THE ART OF THE NORTHERN RENAISSANCE

Fall term. Credit four hours. T Th S 10:10. Mr. Turnure.

A general investigation of the development of realism in Flanders and Germany from its beginnings in the Middle Ages to the seventeenth century. Special attention will be given to major artists such as Jan van Eyck and Albrecht Dürer.

### 347. ART OF THE EARLY RENAISSANCE IN ITALY

Fall term. Credit four hours. M W F 10:10. Mr. Calkins.

A survey of painting and sculpture in Italy during the late Middle Ages and Early Renaissance, with emphasis on the major trends from Giotto through Botticelli in the fourteenth and fifteenth centuries.

### 348. ART OF THE HIGH RENAISSANCE IN ITALY

Spring term. Credit four hours. T Th S 10:10. Mrs. Dotson.

Focusing on the works of Leonardo, Michelangelo, Raphael, and Titian, the course will deal with the origin and development of a monumental style in Italian art around 1500, and with its diffusion and modification in various Italian and northern European centers.

### ITALIAN RENAISSANCE ARCHITECTURE

(Architecture 436) (Arch.)

Spring term. Credit four hours. T Th S 9:05. Mr. Calkins.

A survey of the major monuments of architecture in Italy in the fifteenth and sixteenth centuries.

### [354. SEVENTEENTH-CENTURY PAINTING]

Not offered in 1967-68.

Fall term. Credit four hours. T Th S 11:15. Mr. Turnure.

[356. ART OF THE SEVENTEENTH AND EIGHTEENTH CENTURIES]

Not offered in 1967-68.

Spring term. Credit four hours. M W F 9:05. Mrs. Roe.

362. EUROPEAN PAINTING OF THE NINETEENTH CENTURY

Fall term. Credit four hours. M W F 12:20. Mr. Brown.

A study of major trends in European painting from Goya to Cézanne. Emphasis will be upon French painting from the era of the French Revolution to the post-Impressionists, but significant developments and major artistic personalities in other European countries will also be considered.

363. MODERN EUROPEAN PAINTING

Spring term. Credit four hours. T Th S 11:15. Mr. Lipke.

A study of major trends in European painting from post-Impressionism to the present day. While French painting—from Cézanne through the School of Paris—will be the principal focus of the course, equal emphasis will be given to academic and avant-garde movements in the visual arts outside of France.

MODERN EUROPEAN ARCHITECTURE

(Architecture 439) (Arch.)

Fall term. Credit four hours. T Th S 9:05. Mr. Brown.

A survey of the nineteenth- and twentieth-century architecture in Europe.

[375. AMERICAN ART OF THE COLONIES AND EARLY REPUBLIC]

Not offered in 1967-68.

Fall term. Credit four hours. T Th S 11:15. Mr. Roe.

376. MODERN AMERICAN ART

Fall term. Credit four hours. T Th S 11:15. Mrs. Benson.

Concentrates on works of the last three decades with some discussion of the painting of the late nineteenth- and early twentieth-century American masters such as Durand, Kensett, Homer, Eakins, and Ryder and of European masters or groups where these are relevant to the contemporary phase. While painting will be the primary focus, considerable attention will be given to combines, sculpture, objects, environments, and related developments. There will be opportunities to study original works.

383. ART OF CHINA

Fall term. Credit four hours. M W F 11:15. Mr. Young.

Major monuments in the history of Chinese art, from the early bronzes through Buddhist sculpture and later painting. The emphasis in the lectures will be on the development of painting, particularly landscape painting, in the Sung through Ming Dynasties. The role of Buddhism, Taoism, and Confucianism in shaping the aesthetic expression of China will also be considered in some detail.

384. ART OF JAPAN.

Spring term. Credit four hours. M W F 11:15. Mr. Young.

A general survey of painting, sculpture, and architecture from earliest times to the modern era. Considerable attention will be paid the development of the various forms of folk art, tea arts, the great decorative traditions, and painting and prints of the "floating world".

## [386. THE ARTS OF INDIA AND SOUTHEAST ASIA]

Not offered in 1967-68.

Spring term. Credit four hours. M W F 11:15. Mr. O'Connor.

## [394. ORIGINAL WORKS OF ART]

Not offered in 1967-68.

Spring term. Credit four hours. For majors and other advanced students.

Prerequisites, any four courses in the Department of the History of Art and consent of the instructor. Limited to 12 students. W 1:25. Mr. Young.

## Seminars and Advanced Courses

The following courses are intended primarily for majors, graduate students, or other advanced students who can meet the prerequisites. Enrollment is limited and consent of the instructor is normally required. All seminars involve the writing and presentation of papers.

## 401. SENIOR TUTORIAL

Spring term only. Credit two hours. Prerequisite, consent of the instructor in charge. Hours to be arranged. Mr. Turnure.

Individual investigation and discussion of topics to be arranged. Restricted to senior majors in the Department of the History of Art.

## 402. SENIOR TUTORIAL

Spring term only. Credit four hours. Prerequisite, consent of the instructor in charge. Hours to be arranged. Mr. Turnure.

Individual investigation and discussion of topics to be arranged. Restricted to senior majors in the Department of History of Art.

## 411. TECHNIQUES AND MATERIALS: PAINTING

Fall term. Credit four hours. Prerequisite, at least four courses in the history of art and consent of the chairman of the department. Limited to 15 students. T 1:25-3:25. Mr. Kahn.

For majors and other advanced students, this course will deal with technical aspects of painting in the historical context. Included will be studies of traditional media employed by the old masters, conservation techniques, and laboratory exercises. Conducted as a seminar with lectures, discussions, museum study, projects, and reports.

## 412. TECHNIQUES AND MATERIALS: GRAPHICS

Spring term. Credit four hours. Prerequisite, at least four courses in the history of art and consent of the chairman of the Department. Limited to 15 students. T 1:25-3:25. Mr. Kahn.

For majors and other advanced students, the course will deal with the various techniques involved in the graphic media throughout its history, with special emphasis on the relationships of form, expression, and technique. Conducted as a seminar, with lectures, discussions, technical and museum studies, and reports.

## [425. EGYPTIAN ART AND ARCHAEOLOGY]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, consent of the instructor. F 1:25. Mr. Turnure.

431. PROBLEMS IN LATE MEDIEVAL ART

Fall term. Credit four hours. Prerequisite, History of Art 331 or consent of the instructor. M 1:25-3:25. Mr. Calkins.

Topic for 1967-68: Northern European painting in the first quarter of the fifteenth century. Conducted as a seminar, with lectures, discussions, and reports.

[GOTHIC ARCHITECTURE]

(Architecture 474) (Arch.)

Not offered in 1967-68.

Spring term. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Calkins.

446. LITERARY SOURCES IN THE ITALIAN RENAISSANCE

Spring term. Credit four hours. Th 1:25-3:20. Mr. Selig.

An examination of a selected number of texts from the field of *Kunstliteratur* (Alberti, Leonardo, Vasari, among others), and consideration of their importance to the history of art and literary criticism with special attention to the critical terminology used. The texts will be read in English. Conducted as a seminar, with lectures, discussion and reports.

[448. PROBLEMS IN SIXTEENTH-CENTURY ART]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, consent of the instructor. Th 1:25-3:25. Mr. Roe.

[454. STUDIES IN SEVENTEENTH-CENTURY ART]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisites, History of Art 202 or the equivalent, and consent of the instructor. Th 1:25-3:25. Mr. Turnure.

463. PROBLEMS IN TWENTIETH-CENTURY ART

Fall term. Credit four hours. Prerequisite, History of Art 363 or 376, and consent of the instructors. Th 1:25-3:25. Mr. Lipke and Mrs. Benson.

Topic for 1967-68: Contemporary philosophies of art and art criticism. An investigation of recent critical writings on the visual arts with the emphasis on the function of criticism, contemporary philosophies of art, and aesthetic inquiry. Conducted as a seminar, with lectures, discussion, field-work, and reports.

464. PROBLEMS IN TWENTIETH-CENTURY ART

Spring term. Credit four hours. Prerequisite, History of Art 363 or 376, and consent of the instructors. Th 1:25-3:25. Mrs. Benson and Mr. Lipke.

Topic for 1967-68: Intermedia in the visual arts. A study of new media in the visual arts since 1945 and their inter-relationships, with consideration of relevant trends in the cinema, happenings, and environmental painting and sculpture. Conducted as a seminar with lectures, discussions, and reports.

PROBLEMS IN THE HISTORY OF MODERN ARCHITECTURE

(Architecture 479) (Arch.)

Spring term. Credit four hours. Mr. Brown. Hours to be arranged.

Investigation, by means of readings, lectures, and reports, of historical problems in architecture of the eighteenth, nineteenth, and twentieth centuries in Europe.

**[472. PROBLEMS IN AMERICAN ART]**

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisites, History of Art 375 and consent of the instructor. W 1:25-3:25. Mr. Roe.

**[484. PROBLEMS IN CHINESE ART]**

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, History of Art 383 and consent of the instructor. W 1:25-3:25. Mr. Young.

**486. STUDIES IN CHINESE PAINTING**

Spring term. Credit four hours. Prerequisite, History of Art 383 and/or consent of the instructor. W 1:25-3:25. Mr. Young.

Topic for 1967-68: Chinese painting and abstract Art. A comparative examination of the principles behind abstraction and conventions in Chinese paintings of the seventeenth and eighteenth centuries and twentieth-century Western art. Conducted as a seminar with discussions, museum study, and reports.

**488. SOUTHEAST ASIAN ART AND ARCHAEOLOGY**

Fall term. Credit four hours. Prerequisite, consent of the instructor. W 1:25-3:25. Mr. O'Connor.

Topic for 1967-68: Southeast Asia in the pre-Colonial period. Studies of selected monuments and art traditions before the advent of Western influence in the region. Conducted as a seminar, with lectures, readings, discussions, and reports.

## Archaeology

Students who are interested in archaeology are directed especially to History of Art 313, 314, 322, 425, and 488, all of which include archaeological material. The following specialized courses treat specific excavational material and procedures, and are therefore open only to a limited number of students who have some background in ancient history, ancient languages, anthropology, or art history.

**[421. NUMISMATICS]**

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, consent of the instructor. Mr. Waage.

**423. CERAMICS AND THE TECHNIQUES OF EXCAVATION**

Fall term. Credit four hours. Prerequisite, consent of the instructor. T 1:25. Mr. Waage.

Pottery specimens will be studied to provide some experience in one of the basic prerequisites of archaeological excavation—the identification of types of pottery. Reports on the use of ceramics and other materials for dating and on the technique of conducting excavations.

## Honors

**493. HONORS WORK**

Fall term. Credit four hours. Hours to be arranged.

Intended for seniors who have been admitted as candidates for Honors. Basic methods of art historical research will be discussed and individual reading and reports assigned leading to the selection of an appropriate thesis topic.

#### 494. HONORS WORK

Spring term. Credit four hours. Prerequisite, History of Art 493.

The individual student, under faculty direction, will prepare a senior thesis.

## Graduate Study

Graduate students in their first year will be assigned to such courses in the 300 and 400 groups as will best serve to round out their previous experience in the history of art. In each course additional individual work will be expected. Such students will also be assigned, as appropriate in the individual case, to one or more postgraduate reading courses during the year. More advanced graduate students will pursue independent study under faculty direction.

#### 591-592. SUPERVISED READING

Throughout the year. Credit four hours a term.

## MATHEMATICS

Mr. A. Rosenberg, Chairman; Messrs. R. P. Agnew, J. B. Ax, M. Balch, J. M. Beck, I. Berstein, L. D. Brown, J. M. Chaiken, S. U. Chase, C. J. Earle, J. Eells, Jr., W. G. Faris, R. H. Farrell, M. E. Fisher, W. H. J. Fuchs, H. H. Gershenson, R. Greenblatt, L. Gross, S. Grosser, R. Hamilton, D. W. Henderson, C. S. Herz, P. J. Hilton, P. J. Kahn, H. Kesten, J. Kiefer, S. Kochen, R. B. Lavine, S. A. Levin, A. W. Knapp, S. Lichtenbaum, G. R. Livesay, M. D. Morley, A. Nerode, P. Olum, L. E. Payne, G. S. Rinehart, O. S. Rothaus, D. P. Sather, S. H. Schanuel, A. H. Schatz, L. Silver, F. Spitzer, R. J. Walker, H. C. Wang, H. Widom, J. Wolfowitz.

At all times a student at Cornell is urged to take the most advanced mathematics course for which he is prepared. Members of the Department are always available to discuss with students the appropriate courses for their levels of ability and interest, and students are urged to avail themselves of this help. However, a great deal of time may be saved by a careful reading of the following remarks.

**BASIC SEQUENCES.** There are two sequences in elementary calculus. They have 111 in common. The upper sequence continues with 122-211-222 while the standard one continues with 112-213. Students who desire more mathematics should take the upper sequence, which is prerequisite for most of the advanced courses. The standard sequence is designed for students whose programs do not permit more than three semesters of mathematics and for those who find the upper sequence

too demanding. A student whose performance in 112 has been exceptional can (with the consent of his instructor) be admitted into 221. A student in the 111-213 sequence who wants the linear algebra material of 221 may obtain it at an appropriate level by taking 331. There are other special-purpose calculus sequences, namely 191-192-293-294, primarily for engineers, and 201-202, which is intended for social scientists and is available only to juniors and seniors.

Entering students who have received a grade of 4 or 5 on the College Entrance Board Advanced Placement Examination will receive at least one semester of advanced standing and credit. These students and all others desiring advanced standing and credit *must* also take the placement examination administered by the Department during orientation week (see page 8). Credit for one or two semesters may be awarded. A well prepared student who distinguishes himself on the Department's placement examination will be placed in 221 and may complete the upper sequence in the freshman year. In exceptional circumstances it is also possible to take 122 and 221 concurrently. Thus a student who has a very firm grounding in only the material of 111 may still be able to complete the upper sequence in one year. Such opportunities should be considered especially by students intending to major in mathematics or allied fields.

**MAJOR OPTIONS.** There are three options available for students intending to major in mathematics; the respective minimum requirements are listed below. In each case, a student will be accepted as a major by the Department only if he can reasonably be expected to have satisfied the prerequisite to his option by the end of the term in which he applies for admission to the major. This acceptance is contingent upon actual fulfillment of the prerequisites.

*Option I.* (This includes all prospective Honors candidates and all students who contemplate an eventual Ph.D. in mathematics.) Prerequisite: Course 221-222. Requirements: (a) 411-412, (b) 431-432, (c) at least 12 additional hours of mathematics courses numbered 300 or above, other than 313, 315, 316, 370; Computer Science 421, 422 may be included in these twelve hours.

The Department strongly recommends that all prospective Option I majors take Physics 207-208 in their freshman year.

*Option II.* (This includes those mainly interested in the application of mathematics who do not contemplate an eventual Ph.D. in mathematics. It will not prepare a student for work at the Ph.D. level in the theoretical side of even such applied areas as statistics, numerical analysis, etc.) Prerequisites: (a) 221-222; (b) Physics 207-208. Requirements: (a) 421, 422; (b) 431; and either 332 or 432, (c) Computer Science 401; (d) an approved 8-hour sequence in statistics, numerical analysis (in the Department of Computer Science), or differential equations; (e) at least eight additional hours of courses numbered 300 or above in mathematics, computer science, or a physical science not including Mathematics 313, 315, 316, 370.

*Option III.* (For prospective secondary school teachers and others

who wish to major in mathematics but do not intend to become professional mathematicians, e.g., premedical and prelaw students. This option does not prepare for graduate work in mathematics.) Prerequisites: (a) 222 or (a') 213 and 200, both at a high level of performance; (b) Physics 101-102, or 207-208. Mathematics requirements: (a) 311-312; (b) 331 if 221 has not been taken, 332; (c) 451-452; (d) Computer Science 401 or Industrial Engineering 9381; and either (e) four additional hours of mathematics courses numbered above 300 plus nine hours of Education courses (Mathematics 370 is recommended but not required) or (e') eight additional hours of mathematics courses numbered above 300. (Students planning to teach in secondary schools should make themselves familiar with state requirements. Students wishing to do student teaching must apply for this in Room 102, Stone Hall, by the end of their first term as juniors.)

The requirements for Honors in mathematics are: (1) satisfaction of the requirements of Option I at a high level of performance; (2) satisfactory performance in the Honors Seminar 401; (3) satisfactory performance on an oral examination. (A knowledge of the material of 421, 422 will be required for this examination.)

Students wishing to take any of the courses numbered 300 or above are invited to confer, before registering, with the instructor concerned.

Some one-year sequences change level from one term to the next, e.g., 371-472. Subject matter is indicated by the second digit thus: 0, general; 1,2, analysis; 3,4, algebra; 5,6, geometry; 7, probability and statistics; 8, logic; 9, other.

The Distribution requirement in mathematics is satisfied with any six hours in mathematics.

In all 600-level courses, as well as in Courses 502 and 552, the final grades will be only S or U.

## General

### 101-102. SELECTED TOPICS IN MATHEMATICS

Throughout the year. Credit three hours a term. First term prerequisite to second. T Th S 12:20.

A lecture course intended for students who do not plan to take many courses in mathematics, but who nevertheless wish to learn some of the principal ideas of the subject. This is not a review course to improve faulty preparation in elementary mathematics. Even though only a modest preparation is presupposed, a number of topics in genuine mathematics, stressing ideas and theory rather than mere manipulation, are treated. The course is not a preparation for any other course, although sometimes a student with a high grade may be admitted to a calculus course.

### 200. BASIC CONCEPTS OF MATHEMATICS

Spring term. Credit three hours. Prerequisite, 213 or, with consent of the instructor, 112. T Th S 9:05.



Primarily for prospective teachers and other undergraduates with a cultural interest in mathematics. Set theory, logic, axiom systems, the real number field, other simple algebraic structures, cardinal numbers.

#### 401. HONORS SEMINAR

Fall term. Credit four hours. Prerequisite, provisional acceptance as a candidate for Honors. Hours to be arranged.

Students will discuss selected topics under the guidance of one or more members of the staff. This seminar is required for Honors in mathematics.

#### 502. GRADUATE PROSEMINAR

Spring term. Credit four hours. Prerequisite, candidacy for an advanced degree with a major in mathematics. M W F 2:30.

Presentation by students of material in the mathematical literature. Required of all graduate students majoring in mathematics.

## Calculus

### 111. CALCULUS

Either term. Credit three hours. Prerequisite, *three years of high school mathematics, including trigonometry*. Fall term: lectures, M W F 11:15, 12:20; T Th S 11:15, 12:20 plus one hour to be arranged. Spring term: M W F 8, 9:05, 10:10, T Th S 8, 11:15, 12:20. Preliminary examinations will be held at 7 p.m. Oct. 9, Nov. 6, Dec. 4.

Plane analytic geometry, differentiation and integration of algebraic and trigonometric functions, applications. In the fall term, the third lecture each week will be of a special character, devoted to a more intensive approach to calculus.

### 112. CALCULUS

Either term. Credit three hours. Prerequisite, 111. Fall term. M W F 9:05, 10:10; T Th S 9:05, 10:10. Spring term: lectures M W 11:15, 12:20; T Th 12:20 plus one hour to be arranged. Preliminary examinations will be held at 7 p.m. on Feb. 26, Mar. 18, Apr. 29.

Differentiation and integration of elementary transcendental functions, the technique of integration, conic sections, polar coordinates, infinite series.

### 213. CALCULUS

Either term. Credit three hours. Prerequisite, 112. Fall term: lectures, T Th 10:10 plus one hour to be arranged. Spring term: M W F 8, 10:10. Preliminary examinations will be held at 7 p.m. on Oct. 9, Nov. 6, Dec. 4.

Solid analytic geometry and vectors, partial differentiation, multiple integrals, differential equations.

### 122. CALCULUS

Either term. Credit three hours. Prerequisite, recommendation of the lecturer in Course 111. (This will be based on exceptional performance in 111.) For fall term, admission by consent of the Department. Fall term: M W F 11:15; T Th S 9:05. Spring term: M W F 10:10, 11:15; T Th S 9:05, 10:10.

Covers content of 112 in more detail and includes more theoretical material.

## 221. CALCULUS

Either term. Credit four hours. Prerequisite, grade of B or better in 122 or (with consent of instructor) exceptional performance in 112. Fall term: M W F 8, 10:10; T Th S 8, 10:10. Spring term: M W F 11:15; T Th S 9:05.

Linear algebra and differential equations. Topics include vector algebra, linear transformations, matrices, linear differential equations, and systems of linear differential equations with constant coefficients.

## 222. CALCULUS

Either term. Credit four hours. Prerequisite, 221. Fall term: M W F 9:05. Spring term: M W F 8, 10:10; T Th S 10:10.

Vector differential calculus, calculus of functions of several variables, multiple integrals.

## 221H-222H. CALCULUS

Honors section of 221-222. Throughout the year. Credit two hours a term. Prerequisite, consent of the instructor. Open only to students simultaneously registered in 411-412. Hours to be arranged.

## 191. CALCULUS FOR ENGINEERS

Either term. Credit four hours. Prerequisite, *three years of high school mathematics, including trigonometry*. Fall term: lectures, M W F 9:05, 11:15, plus recitation periods to be arranged. Spring term: M W F S 9:05, 11:15. Preliminary examinations will be held at 7 p.m. on Oct. 4, Oct. 15, Nov. 15, Dec. 6.

Plane analytic geometry, differential and integral calculus, applications.

## 193. CALCULUS FOR ENGINEERS

Fall term. Credit four hours. Prerequisite, *four years of high school mathematics, including trigonometry and calculus*. Lectures M W F 9:05, 11:15, plus recitation periods to be arranged. Preliminary examinations will be held at 7 p.m. on Oct. 4, Oct. 15, Nov. 15, Dec. 6.

Plane analytic geometry, differential and integral calculus, applications.

## 192. CALCULUS FOR ENGINEERS

Either term. Credit four hours. Prerequisite, 191 or 193. Fall term: M W F S 9:05, 11:15. Spring term: lectures, M W F 9:05, 11:15, plus recitation periods to be arranged. Preliminary examinations will be held at 7 p.m. on Feb. 14, March 6, Apr. 3, May 1.

Transcendental functions, technique of integration and multiple integrals, vector calculus, analytic geometry in space, partial differentiation, applications.

## 194. CALCULUS FOR ENGINEERS

Spring term. Credit four hours. Prerequisite, recommendation of the lecturer in Course 191 or Course 193. Lectures, M W F 9:05, 11:15, plus recitation periods to be arranged. Preliminary examinations will be held at 7 p.m. on Feb. 14, Mar. 6, Apr. 3, May 1.

Covers contents of 192 in more detail and includes more theoretical material.

## 293-293H. ENGINEERING MATHEMATICS

Either term. Credit four hours. Prerequisite, 192 or 194. Fall term: lectures, M W F 8, 12:20, plus recitation periods to be arranged. Spring term:

M W F S 9:05, 11:15. Preliminary examinations will be held at 7 p.m. on Oct. 10, Nov. 7, Dec. 5.

Vectors and matrices, first-order differential equations, infinite series, complex numbers, applications. Problems for programming and running on the automatic computer will be assigned, and students are expected to have a knowledge of computer programming equivalent to that taught in Engineering 104.

#### 294-294H. ENGINEERING MATHEMATICS

Either term. Credit three hours. Prerequisite, 293. Fall term: M W F 8, 12:20. Spring term: lectures, M W 8, 12:20, plus recitation periods to be arranged. Preliminary examinations will be held at 7 p.m. on Feb. 27, Mar. 19, Apr. 30.

Linear differential equations, quadratic forms and eigenvalues, differential vector calculus, applications.

#### 201-202. MATHEMATICS FOR SOCIAL SCIENTISTS

Throughout the year. Credit four hours a term. Prerequisite, upperclass standing. First term prerequisite to second. M W F 11:15.

A treatment of calculus and other topics of interest to social scientists. This course will not prepare the student to continue mathematics beyond the 400 level.

## Applied Mathematics and Differential Equations

#### 313. TOPICS IN ALGEBRA AND ANALYSIS FOR ENGINEERS

Fall term. Credit four hours. Prerequisite, 213. M W F 9:05.

Some topics in modern algebra and advanced calculus useful in engineering. As many topics as time permits will be treated rigorously. The algebra includes geometry of vector spaces, simple properties of linear operators including eigenvalues and eigenvectors. The topics in advanced calculus discussed are calculus of several variables, Lagrange multipliers, and Laplace transforms.

#### 315-316. HIGHER CALCULUS

Throughout the year. Credit three hours a term. Prerequisite, 213. First term prerequisite to second. T Th S 10:10.

Intended for students who have had only three semesters of calculus. It does not prepare for 415-416, and will not meet the needs of those graduate students whose work requires really serious application of mathematical methods.

Partial differentiation, multiple and line integrals, vector algebra (including matrices) and vector analysis, Fourier series, partial differential equations, complex variables, Laplace transforms. Emphasis is placed on a wide range of formal applications of the calculus rather than on the logical development.

#### 421. APPLICABLE MATHEMATICS

Fall term. Credit four hours. Prerequisite, 222 or honors section of 294 or consent of the instructor. (Students from regular sections of 294 will be admitted upon the 294 instructor's recommendation, provided their grades are very high and they make up the extra work.) M W F 12:20, Th 2:30.

Graduate students who need mathematics extensively in their work and who have had a solid advanced calculus course as undergraduates should

take 415-416. If they have not had such an advanced calculus course they should take 421-422-423. If their preparation is still too weak for this, they should take all or part of 221-222, followed by 421-422-423.

Theorems of Stokes, Green, Gauss, etc. Sequences and infinite series. Fourier series and orthogonal functions. Introduction to complex variables.

#### 422. APPLICABLE MATHEMATICS

Spring term. Credit four hours. Prerequisite, 421 or consent of the instructor. M W F 12:20, Th 2:30.

Continuation of complex variables. Conformal mappings. Harmonic functions. Some special functions. Differential equations. Laplace and Fourier transforms. Asymptotic expansions of functions.

#### 423. APPLICABLE MATHEMATICS

Fall term. Credit four hours. Prerequisite, 422. M W F 12:20, Th 2:30.

Linear operators and integral equations. Calculus of variations. Application to eigenvalue problems. Green's function, and treatment of special problems of mathematical physics.

#### 415-416. MATHEMATICAL METHODS IN PHYSICS

Throughout the year. Credit four hours a term.

Intended for graduate students in physics or related fields who have had a strong advanced calculus course and at least two years of general physics. The course goes very quickly, covering in two semesters slightly more than 421-422-423. Undergraduates will be admitted only with consent of the instructor. First term prerequisite to second. T W Th F 12:20. Mr. Fuchs.

Lectures and problem work designed to give a working knowledge of the principal mathematical methods used in advanced physics. Topics include infinite series, Fourier series and integrals, Laplace transforms, complex variable, Calculus of variations, matrices, integral equations, and eigenvalue problems.

#### 427-428. INTRODUCTION TO DIFFERENTIAL EQUATIONS

Throughout the year. Credit four hours a term. Prerequisite, 222, or 294, or consent of instructor. First term prerequisite to second. M W F 12:20.

First term, ordinary differential equations covering the basic theory. Topics include uniqueness and existence theory, Sturm-Liouville theory, singular points, stability, approximation methods and applications. Second term, partial differential equations with treatments of Laplace, heat and wave equations. Topics include classification, maximum principles, uniqueness, stability, approximation methods and applications.

#### 517-518. ORDINARY DIFFERENTIAL EQUATIONS

Throughout the year. Credit four hours a term. Prerequisites, 411-412 and concurrent registration in 413. First term prerequisite to second. M W F 10:10. Mr. Levin.

For description see the *Announcement of the Graduate School*.

#### 519-520. PARTIAL DIFFERENTIAL EQUATIONS

Throughout the year. Credit four hours a term. Prerequisite, concurrent registration in 413 or, with consent of instructor, 423 or 416. First term prerequisite to second. T Th S 10:10. Mr. Balch.

For description see the *Announcement of the Graduate School*.

### 521. ELEMENTARY FUNCTIONAL ANALYSIS

Fall term. Credit four hours. Prerequisite, 415-416 or 421-422-423, or consent of the instructor. T Th S 9:05. Mr. Lavine.

Elementary set theory and topology, Banach and Hilbert spaces, measure and integration, spectral theorem for bounded operators. Graduate students in mathematics should take 613 for Functional Analysis.

### 522. APPLIED FUNCTIONAL ANALYSIS

Spring term. Credit four hours. Prerequisite, 521. T Th S 9:05. Mr. Lavine.

Spectral theory for unbounded operators in Hilbert space, compact operators, representations of compact groups, distributions. Applications to Fourier analysis, integral and differential equations, calculus of variations, quantum mechanics.

*Note:* Since the content of the 1968 version of 522 is quite different from that of the 1967 version, students could possibly take 522 twice with profit.

### 627-628. SEMINAR IN PARTIAL DIFFERENTIAL EQUATIONS

Throughout the year. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Payne.

For courses in numerical analyses see Computer Science 421, 422.

### [619-620. ADVANCED PARTIAL DIFFERENTIAL EQUATIONS.]

Not offered in 1967-68.

Throughout the year. Credit four hours. Prerequisite, 519-520.

## Analysis

### 311-312. ELEMENTARY ANALYSIS

Throughout the year. Credit four hours a term. Prerequisites, 213, 200. T Th S 10:10.

A careful study of the topology of the real line. Functions. Theory of continuous functions of one real variable. Differentiation and integration of such functions. Series and sequences. Applications. The material of this course is similar to that of 411-412, below, but is taught at a more elementary level and at a slower pace. A student may not receive credit for both 311-312 and 411-412.

### 411-412. INTRODUCTION TO ANALYSIS

Throughout the year. Credit four hours a term. Prerequisite, 222. T Th S 10:10.

(There will be a special honors section of this course. The instructor should be consulted.)

An introduction to the theory of functions of real variables, stressing rigorous logical development of the subject rather than technique of applications. Topics include elementary topology, the real number system, continuous and differentiable functions, integration, convergence and approximation theorems, Fourier series, calculus in several variables, elementary differential geometry.

### 413. INTRODUCTION TO THE THEORY OF FUNCTIONS OF ONE COMPLEX VARIABLE

Spring term. Credit four hours. Prerequisite, 222 or 312. M W F 9:05. Course

411 is not a prerequisite, but some previous acquaintance with advanced calculus as presented in 411 is definitely helpful.

A rigorous introduction to complex variable theory. Intended mainly for undergraduates and for graduate students outside mathematics. Complex numbers. Differential and integral calculus for functions of a complex variable including Cauchy's theorem and the calculus of residues. Elements of conformal mapping. Elements of several complex variables.

#### 511-512. REAL AND COMPLEX ANALYSIS

Throughout the year. Credit four hours a term. Prerequisite, 412. M W F 9:05.

First term: Set-theoretic preliminaries, abstract integration, Borel measures, Lebesgue measure,  $L_p$  spaces, Hilbert spaces, Banach spaces, product spaces, differentiation. Second term: Fourier transforms. Complex variables, harmonic functions, Schwarz lemma, approximation by rational functions, conformal mappings, including Riemann mapping theorem, Weierstrass- and Mittag-Leffler theorems, Jensen's formula, analytic continuation, the modular function, Picard's theorem.

#### 523. ANALYSIS ON MANIFOLDS

Spring term. Credit four hours. Prerequisites, 500 and 512. Hours to be arranged. Mr. Eells.

Calculus on Banach spaces and manifolds.

#### 611-612. SEMINAR IN ANALYSIS

Throughout the year. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Fall term, Mr. Earle. Spring term, Mr. Hamilton.

#### 613. FUNCTIONAL ANALYSIS

Spring term. Credit four hours. Prerequisites, 432 and 512. Hours to be arranged.

Topological vector spaces, Banach and Hilbert spaces, Banach algebras. Additional topics to be selected by instructor.

#### 615. FOURIER ANALYSIS

Fall term. Credit four hours. Prerequisites, 500 and 512. Hours to be arranged. Mr. Herz.

$L_p$  spaces of functions on Euclidean space. The Marcinkiewicz interpolation theorem. Fourier transforms of functions in  $L_p$ . The Hardy-Littlewood maximal theorem. Singular integrals.

#### 623. SEVERAL COMPLEX VARIABLES

Fall term. Credit four hours. Prerequisites, 500 and 514. Hours to be arranged. Mr. Rothaus.

Basic definitions, local properties, power series and plurisubharmonic functions, convexity and analytic envelopes.

#### [514. COMPLEX VARIABLE THEORY]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisites, 411 and 500.

#### [528. VARIATIONAL METHODS]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, 413.

[617. ANALYTIC NUMBER THEORY]

Not offered in 1967-68.

One term. Credit four hours. Prerequisite, 514.

[621. MEROMORPHIC FUNCTIONS]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, consent of the instructor.

[622. RIEMANN SURFACES]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisites, 514, 531, 551.

## Algebra

### 331. LINEAR ALGEBRA

Either term. Credit four hours. Prerequisites, 200 (this may be waived with consent of instructor) and 213. *A student may not receive credit in both 221 and 331.* M W F 10:10.

Emphasis on applications rather than theoretical development. Vectors, matrices, and linear transformations, affine and euclidean spaces, transformation of matrices, eigenvalues.

### 332. ALGEBRA AND NUMBER THEORY

Spring term. Credit four hours. Prerequisite, 221 or 331. M W F 10:10.

Commutative rings with unity, fields, and finite groups. Motivations and examples are mostly derived from arithmetical problems on the integers or congruence classes of integers. Course 332 will not serve as a prerequisite for courses numbered 500 or higher.

### 431-432. INTRODUCTION TO ALGEBRA

Throughout the year. Credit four hours a term. Prerequisite, 221 or 331. First term prerequisite to second. M W F 10:10. (There will be a special Honors section of this course. The instructor should be consulted.)

A rigorous introduction to modern algebra. First term, linear algebra. Second term, introduction to algebraic systems such as groups, rings, modules and fields.

### 531-532. ALGEBRA

Throughout the year. Credit four hours a term. Prerequisite, 432. First term prerequisite to second. T Th 2:30-4.

First term: finite groups, field extensions, Galois theory, rings and algebras, tensor algebra. Second term: Wedderburn structure theorem, Brauer group, group cohomology, Ext, Dedekind domain, primary decomposition, Hilbert basis theorem, local rings. Additional topics selected by instructor.

### 631-632. SEMINAR IN ALGEBRA

Throughout the year. Credit four hours a term. Prerequisite, consent of the instructor. Hours to be arranged.

### 635. THEORY OF RINGS

Fall term. Credit four hours. Hours to be arranged. Mr. Silver.

Advanced topics in commutative Noetherian rings including some of the following: regular local rings; the Koszul complex; depth; multiplicity; Macaulay rings. Prerequisites are homological algebra and some familiarity with the basic notions of Noetherian rings.

#### 639. LIE ALGEBRAS

Spring term. Credit four hours. Prerequisite, 531.

Topics to be covered include the theorems of Lie and Engel, structure of complex semisimple Lie algebras and their classification.

#### 649. TOPOLOGICAL GROUPS

Fall term. Credit four hours. Prerequisites, 500 and 531. Hours to be arranged. Mr. Grosser.

Elementary properties of topological groups; Haar measure. The Peter-Weyl theorem. Basic results of structure theory, duality theory, and representation theory. The Gelfand-Raikov theorem.

#### [549-550. LIE GROUPS]

Not offered in 1967-68.

Throughout the year. Credit four hours a term. Prerequisites, 500 and 531.

#### [633. GROUP THEORY]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, 531.

#### [637. ALGEBRAIC NUMBER THEORY]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, 531.

#### [641. HOMOLOGICAL ALGEBRA]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, 531.

## Geometry and Topology

#### 451-452. CLASSICAL GEOMETRIES

Throughout the year. Credit four hours a term. Prerequisite, 221 or 331 or 431, which may be taken concurrently. First term prerequisite to second. T Th S 9:05.

Axiomatic methods in geometry. Foundations of Euclidean geometry. Non-Euclidean geometry, projective geometry, other geometric theories.

#### 454. INTRODUCTION TO DIFFERENTIAL GEOMETRY

Spring term. Credit four hours. Prerequisite, 222. M W F 11:15.

An introduction to differential forms and their application to the study of curves, surfaces, and higher dimensional manifolds.

#### 500. GENERAL TOPOLOGY

Fall term. Credit four hours. Prerequisite, 412. M W F 3:35.

Topics from set theory, topological spaces, function spaces, fiber spaces, manifolds, and topological groups.



551. INTRODUCTORY ALGEBRAIC TOPOLOGY

Spring term. Credit four hours. Prerequisites, 432 and 500. M W F 3:35.

Homology and cohomology theories for complexes and spaces. Manifolds and geometric applications.

553-554. ALGEBRAIC TOPOLOGY

Throughout the year. Credits four hours a term. Prerequisite, 551 or the equivalent. Hours to be arranged.

Categories and functors, exact and half exact functors, homotopy theory, cohomology operations, spectral sequences, and applications.

651-652. SEMINAR IN TOPOLOGY

Throughout the year. Credit four hours a term. Prerequisite, consent of the instructor. Hours to be arranged.

653-654. ADVANCED TOPOLOGY

Throughout the year. Credit four hours a term. Prerequisites, 551 or consent of the instructor. Hours to be arranged. Mr. Henderson.

For description see the *Announcement of the Graduate School*.

659. SYMMETRIC SPACES

Spring term. Credit four hours. Prerequisite, 549-550. Hours to be arranged. Mr. Wang.

Symmetric spaces and their group of isometries. Decomposition theorem. Root system associated to a symmetric pair. Geometrical properties of irreducible symmetric spaces. Symmetric Kähler manifolds.

667. ALGEBRAIC GEOMETRY

Spring term. Credit four hours. Prerequisites, 500 and 531. Hours to be arranged.

Affine and projective varieties. Divisors. Riemann-Roch theorem. Introduction to schemes.

[352. ELEMENTARY TOPOLOGY]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, 221 or 331.

[661-662. SEMINAR IN GEOMETRY]

Not offered in 1967-68.

Throughout the year. Credit four hours a term. Prerequisite, consent of the instructor.

[633. MANIFOLDS]

Not offered in 1967-68.

Throughout the year. Credit four hours a term. Prerequisite, 551.

[655-656. HOMOTOPY THEORY]

Not offered in 1967-68.

Throughout the year. Credit four hours a term. Prerequisite, 551.

## Probability and Statistics

370. ELEMENTARY STATISTICS

Fall term. Credit four hours. Prerequisites, 112, 122 or 202. M W F 12:20.

Preliminary examinations will be held at 7:30 p.m. on Oct. 4, Oct. 25, Nov. 15, Dec. 6. Mr. Brown.

Topics in probability which are essential to an understanding of statistics; introduction to the principles underlying modern statistical inference and the rationale underlying choice of statistical methods in various situations. This is a terminal course, intended for those who will take no further work in this area.

### 371. BASIC PROBABILITY

Fall term. Credit four hours. Prerequisite, 213 or 222. M W F 12:20. Preliminary examinations will be held at 7:30 p.m. on Oct. 4, Oct. 25, Nov. 15, Dec. 6. Mr. Kiefer.

Topics covered include combinatorics, important probability laws, expectations, moments, moment generating functions, limit theorems. Emphasis is on diverse applications and on development of use in statistical applications. While this course can serve as a terminal course in basic probability, it is primarily intended for those who will continue with 472. (See also the descriptions of 370 and 571.)

### 472. STATISTICS

Spring term. Credit four hours. Prerequisite, 371 and knowledge of linear algebra such as taught in 221. M W F 12:20. Preliminary examinations will be held at 7:30 p.m. on Feb. 14, Mar. 6, Apr. 3, May 1. Mr. Kiefer.

Classical and recently developed statistical procedures are discussed in a framework which emphasizes the basic principles of statistical inference and the rationale underlying the choice of these procedures in various settings. These settings include problems of estimation, hypothesis testing, large sample theory, experimental designs, sequential analysis and multiple decision problems. (See also the description of 370 and 572.)

### 571. PROBABILITY

Fall term. Credit four hours. Prerequisite, 412 or, with consent of the instructor, 416 or 422. M W F 12:20. Examinations and make-up lectures, when necessary, will be held on Thursday evenings at 7:30 p.m. Mr. Wolfowitz.

For description see the *Announcement of the Graduate School*.

### 572. STATISTICAL ANALYSIS

Spring term. Credit four hours. Prerequisite, 571. M W F 12:20. Mr. Wolfowitz.

A continuation of 571. Topics include an introduction to the theory of point estimation; consistency, efficiency, and sufficiency, and the method of maximum likelihood; the classical tests of hypotheses and their power; the theory of confidence intervals; the basic concepts of statistical decision theory; the fundamentals of sequential analysis.

Intended to furnish a rigorous introduction to mathematical statistics, the course is prerequisite to all advanced courses in statistics.

### 574. ADVANCED PROBABILITY

Spring term. Credit four hours. Prerequisite, 571. M W F 11:15. Mr. Spitzer.

A continuation of Math. 571. Selected topics from Volumes 1 and 2 of Feller. Modern limit theorems, discrete and selected continuous parameter Markov chains, related topics in semigroups and resolvents, ergodic and renewal theorems with applications.

671-672. SEMINAR IN STATISTICS

Throughout the year. Credit four hours. Prerequisite, consent of the instructor. M 4-6.

675. STATISTICAL ESTIMATION

Fall term. Credit four hours. Prerequisite, 572. Hours to be arranged. Mr. Brown.

Randomization, sufficiency, completeness, minimum variance estimators. Derivation of sequential minimax estimators by the methods of differential inequalities, Bayes solutions, and invariance. The Neyman-Pearson theory of testing hypotheses and interval estimation.

676. DECISION FUNCTIONS

Spring term. Credit four hours. Prerequisite, 675. Hours to be arranged. Mr. Brown.

Wald's theory of decision functions. Multidecision problems. Existence theorems, complete class theorems, and other general decision theoretic results. Optimum character of the sequential probability ratio test. Recent developments.

679 (also Economics 685). SEMINAR IN MATHEMATICAL ECONOMICS

Spring term. Credit four hours. Prerequisite, consent of instructor. F 4-6. Messrs. Wolfowitz and Stigum.

The main topics to be covered are general economic equilibrium, stability of equilibria, and the theory of value under conditions of uncertainty.

[575. INFORMATION THEORY]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, 411, or, with consent of the instructor, 416 or 421.

[673. ANALYSIS OF VARIANCE]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, 572.

[674. DESIGN OF EXPERIMENTS]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, 673.

[677-678. STOCHASTIC PROCESSES]

Not offered in 1967-68.

Throughout the year. Credit four hours a term. Prerequisite, 512, 571 or consent of the instructor. First term prerequisite to second.

## Mathematical Logic

381. ELEMENTARY MATHEMATICAL LOGIC

Spring term. Credit four hours. Prerequisite, 122 or 200. M W F 11:15.

Propositional calculus via truth tables and as a formal axiomatic theory. Boolean algebras. Introduction to the predicate calculus.

## 170 MODERN FOREIGN LANGUAGES, LITERATURES

### 581-582. LOGIC

Throughout the year. Credit four hours a term. Prerequisite, 412, 432 or consent of instructor. M W F 11:15.

A study of elementary and advanced topics in mathematical logic. Theorems of Herbrand, Gentzen, Church, and Gödel on provability and undecidability. Theory of recursive functions and recursively enumerable sets.

### 681-682. SEMINAR IN LOGIC

Throughout the year. Credit four hours a term. Prerequisite, consent of the instructor. Hours to be arranged.

### 683. THEORY OF MODELS

Fall term. Credit four hours. Prerequisite, 581-582. Hours to be arranged.

### [685. METAMATHEMATICS]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, 482.

### 690. SUPERVISED READING AND RESEARCH

## MODERN FOREIGN LANGUAGES AND LITERATURES

Courses in modern foreign languages and literatures are offered as follows:

### DEPARTMENT OF GERMAN LITERATURE

Mr. O. J. Mattijs Jolles, Chairman.

Courses in German literature.

### DIVISION OF MODERN LANGUAGES

Mr. J. M. Cowan, Director.

All elementary and intermediate language courses; conversation and composition courses; courses in linguistics.

### DEPARTMENT OF ROMANCE STUDIES

Mrs. Jean Parrish, Chairman.

Courses in French literature, Italian literature, and Spanish literature. See separate language headings for course listings and information about major programs.

### DEPARTMENT OF RUSSIAN LITERATURE

Mr. G. Gibian, Chairman

Courses in Russian literature.

## Burmese

Mr. R. B. Jones, Jr., and Staff.

### 101-102. ELEMENTARY COURSE

Throughout the year. Credit six hours a term. Hours to be arranged.

### 201-202. BURMESE READING

Throughout the year. Credit three hours a term. Prerequisite for 201, Qualification in Burmese; for 202, Burmese 201 or consent of the instructor. Hours to be arranged. Mr. Jones.

### 203-204. COMPOSITION AND CONVERSATION

Throughout the year. Credit three hours a term. Prerequisite for 203, Qualification in Burmese; for 204, Burmese 203 or consent of the instructor. Hours to be arranged. Mr. Jones.

### 301-302. ADVANCED BURMESE READING

Throughout the year. Credit four hours a term. Prerequisite, Burmese 201-202 or the equivalent. Hours to be arranged. Mr. Jones.

Selected readings in Burmese writings in various fields.

## Cebuano (Bisayan)

Mr. J. U. Wolff and Staff.

### 101-102. ELEMENTARY COURSE

Throughout the year. Credit six hours a term. Offered according to demand. Hours to be arranged.

## Chinese

Messrs. N. C. Bodman, F. C. Chin, D. Hawkes, J. McCoy, Mrs. Pei Shin Ni, Mr. H. Shadick, and Staff.

For a major involving Chinese studies see Asian Studies.

### 101-102. ELEMENTARY CHINESE

Throughout the year. Credit six hours a term. M-F 8, M W F 9:05.

### 201-202. INTERMEDIATE CHINESE I

Throughout the year. Credit four hours a term. Prerequisite, Qualification in Chinese. M W F 10:10 and two hours to be arranged.

### 213. INTRODUCTION TO CLASSICAL CHINESE

Fall term. Credit three hours. Prerequisite, Qualification in Chinese. M W F 11:15. Mr. Shadick.

Systematic analysis of basic patterns in classical Chinese; study of texts; exercises in composition. An introduction to the literary style, primarily for students intending to work in classical literature, history, or art history.

**221H-222H. ELEMENTARY HOKKIEN CHINESE**

Throughout the year. Credit three hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Bodman.

**221C-222C. ELEMENTARY CANTONESE**

Throughout the year. Credit three hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Mr. McCoy.

**301-302. INTERMEDIATE CHINESE II**

Throughout the year. Credit four hours a term. Prerequisite, Chinese 202 or equivalent. M-F 11:15.

Readings and drill in modern expository Chinese, three hours; introduction to classical Chinese, two hours. This latter is intended to prepare students of modern Chinese to understand classical forms and quotations occurring in vernacular texts and to use dictionaries and reference works.

**312. INTERMEDIATE CLASSICAL CHINESE**

Spring term. Credit three hours. Prerequisite, Chinese 213 or 301. M W F 11:15. Mr. Shadick.

Study of texts in a variety of styles, ancient and modern.

**313. CHINESE HISTORICAL AND PHILOSOPHICAL TEXTS**

Fall term. Credit four hours. Prerequisite, Chinese 302 or 312, or consent of the instructor. T Th 11:15 and one hour to be arranged. Mr. Shadick.

Selections from the standard histories, the classical philosophers, and early modern reformers.

**402. HISTORY OF THE CHINESE LANGUAGE**

Either term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Bodman.

**403. LINGUISTIC STRUCTURE OF CHINESE**

Either term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Bodman.

**411-412. ADVANCED READINGS IN MODERN CHINESE**

Throughout the year. Credit four hours a term. Prerequisite, Chinese 302. Hours to be arranged.

**414. CLASSICAL CHINESE PROSE**

Spring term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged.

**416. CLASSICAL CHINESE POETRY AND DRAMA**

Fall term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged.

**420. READINGS IN THE TRADITIONAL CHINESE NOVEL**

Either spring or fall term, according to demand. Credit two or four hours. Prerequisite, consent of the instructor. Hours to be arranged.

**521-522. ADVANCED READINGS IN CLASSICAL CHINESE**

Throughout the year. Credit two or four hours a term. Prerequisite, consent of the instructor. Hours to be arranged.

#### 571. SEMINAR IN CHINESE LITERATURE

Fall term. Credit and hours to be arranged.

#### SINO-TIBETAN LINGUISTICS

(See Linguistics 581-582.)

### Czech

Mr. R. L. Leed.

#### 221-222. ELEMENTARY COURSE

Throughout the year. Offered according to demand. Credit three hours a term. Prerequisite, Qualification in Russian and consent of the instructor. Hours to be arranged.

### Dutch

Mr. J. M. Echols.

#### [151-152. ELEMENTARY GRADUATE READING COURSE]

Not offered in 1967-68.

Throughout the year. Credit three hours a term. Hours to be arranged.

#### [301-302. ELEMENTARY READING COURSE]

Not offered in 1967-68.

Throughout the year. Credit four hours a term. Prerequisite, satisfaction of language requirement for graduation and consent of the instructor. Hours to be arranged. Mr. Echols.

Designed to impart a sound knowledge of the language for students who need it as a tool for research or who plan to go on to graduate school.

## English as a Second Language

The following courses are offered by the Division of Modern Languages. Foreign Students should consult a member of the Division at Morrill Hall 206.

#### 102. ENGLISH AS A SECOND LANGUAGE

Fall term. Credit six hours. Prerequisite, placement by the instructor. Hours to be arranged.

#### 151-152. ENGLISH AS A SECOND LANGUAGE

Throughout the year. Credit three hours a term. Open only to graduate students with written approval of the Graduate School. Hours to be arranged.

#### 211-212. ENGLISH AS A SECOND LANGUAGE

Throughout the year. Credit three hours a term. Prerequisite, placement by the instructor. M W F 10:10 or 11:15.

## French

Miss Claire Asselin, Messrs. L. J. Benoit, J. Bereaud, T. C. Cave, Miss Alice Colby, Messrs. J.-J. Demorest, H. Dieckmann, H.-J. Frey, Mrs. Janet Gordon, Messrs. D. I. Grossvogel, R. A. Hall, Jr., Mrs. S. Alexandra Littauer, Messrs. G. W. MacLennan, M. L. Mazzola, Mrs. Dorothy McCall, Mrs. Jean Parrish, Mr. A. Seznec, and Staff.

A student majoring in French is expected to become conversant with a fair portion of the masterworks of French literature, to acquaint himself with the outlines of French literary history, and to develop some skill in literary analysis. To this end he will be expected to complete successfully 28 hours of French literature courses at the 300 level or higher, with papers to be written in French. At least one 400 course in French literature must be included. One term of French 401, 402, or 403, may be substituted for four hours of the 28 required in French literature (but not for the required 400 course in literature). One four-hour course offered by the Department of Comparative Literature may be counted toward the 28 required hours if prior approval has been obtained from the major adviser.

The major student will also be expected to acquire competence in the handling of French. This competence will be demonstrated by the successful completion of French 304 or by the passing of an oral and written examination to be taken no later than the end of the first semester of the senior year. The level of the exam will be that ordinarily reached at the end of four semesters of language study beyond Qualification. (For definition of Qualification see page 12 of this Announcement.) The particular language courses taken by any student will, of course, be partially determined by his level of preparation at entrance, personal talent, particular opportunities such as Junior Year Abroad, and the like. The placement in language courses of incoming majors will be decided, in the case of students who have done no previous language work at Cornell, by an oral and written examination which will be administered in the second term of the sophomore year.

The Honors program in French is open to superior students to be selected on the basis of grades, a letter of application, recommendation, and interview. Those students will meet weekly, during junior and senior years, in tutorial conferences with a faculty member. Junior tutorial will be devoted to intensive study of selected problems or authors and to the choice of a topic for the Honors essay; senior tutorial, to the preparation and writing of that essay. Honors students may be released from one or two courses in either junior or senior year to write the Honors essay. They will take a general oral examination at the end of the senior year. For details, please consult Mr. Seznec.

The Distribution requirement in the Humanities is satisfied in French by French 201-202 if this course is not used in fulfillment of the language requirement.

Of the courses listed below, those dealing with literature are staffed



and administered by the Department of Romance Studies, and inquiries in regard to them ought to be addressed to that Department (278 Goldwin Smith).

The courses dealing with language and linguistics are offered by the Division of Modern Languages, and administered by that Division (106 Morrill Hall).

#### 101. ELEMENTARY COURSE

Either term. Credit six hours. Students who have previously studied French should consult page 12 before registering for this course. Fall term: drill M-F 8, 9:05, 11:15, 12:20, or 1:25; lectures T Th 12:20 or 2:30. Spring term: drill M-F 8 or 11:15; lecture T Th 9:05.

#### 102. ELEMENTARY COURSE

Either term. Credit six hours. Prerequisite, French 101 or its equivalent. Students who have previously studied French should consult page 12 before registering for this course. Fall term: drill M-F 8, 9:05, 10:10, 11:15, 12:20, or 1:25; lectures M W 8 or 11:15 or T Th 10:10. Spring term: drill M-F 8, 10:10, 11:15, or 12:20; lectures M W 11:15 or T Th 12:20 or 2:30.

#### 112. ELEMENTARY COURSE

Either term. Credit three hours. Prequalification course for students entering above the level of placement in French 102. Fall term: drill M W F 9:05 or 12:20 or T Th S 10:10 or 11:15; lectures F 8, 11:15, 12:20, or 2:30. Spring term: drill M W F 11:15 or T Th S 10:10; lectures F 12:20 or 2:30.

#### 121. ELEMENTARY READING COURSE

Fall term. Credit three hours. Open only to seniors (not in Arts and Sciences) with written permission from their colleges. Hours to be arranged.

Designed to help students prepare for the Graduate Reading Examination a reading knowledge of the language.

#### 122. ELEMENTARY READING COURSE

Spring term. Credit three hours. Open only to seniors (not in Arts and Sciences) with written permission from their colleges. Prerequisite, French 121, or its equivalent. Hours to be arranged.

Designed to help students planning to go to graduate school to acquire a reading knowledge of the language.

#### 151. ELEMENTARY GRADUATE READING COURSE

Fall term. Credit three hours. Open only to graduate students. Hours to be arranged.

Designed to help student prepare for the Graduate Reading Examination administered by the Graduate School.

#### 152. ELEMENTARY GRADUATE READING COURSE

Spring term. Credit three hours. Open only to graduate students. Prerequisite, French 151 or one year of college French or two years of high school French. Hours to be arranged.

Designed to help students prepare for the Graduate Reading Examination administered by the Graduate School.

#### 201-202. INTRODUCTION TO FRENCH LITERATURE

Primarily intended for freshmen. Course 201 prerequisite to 202. Both courses given each term. Credit three hours a term. Prerequisite, Qualifica-

tion in French (for definition of Qualification see page 12). The course will presuppose the ability to read literary French with some facility. In the fall term, French 201 will be offered M W F 9:05, 10:10, 11:15, 12:20, or 2:30; or T Th S 9:05 or 11:15. French 202 will be offered M W F 12:20; T Th S 10:10 or 12:20. In the spring term, French 201 will be offered M W F 12:20; or T Th S 9:05 or 12:20. French 202 will be offered M W F 9:05, 10:10, 11:15, 12:20, or 2:30; or T Th S 9:05, 10:10, or 11:15. Mrs. Parrish, Mrs. McCall, Messrs. Béreaud, Demorest, Seznec, Grossvogel and Staff.

Serves as an intermediate reading course and as an introduction to literature. Complete works are read representing significant writings from the Middle Ages to the present; in French 201, such poets and playwrights as Ronsard, La Fontaine, Baudelaire, Mallarmé, Corneille, Molière, and Racine; in French 202, the prose writings of such authors as Montaigne, Rabelais, Proust, and Sartre. The object is to acquire reading skill while developing a critical appreciation of a foreign literature. As much English as is necessary will be used in sections at the beginning; as the year goes on, classes will be conducted more and more in French.

### 203. INTERMEDIATE CONVERSATION

Either term. Credit three hours. Prerequisite, Qualification in French (for definition of Qualification, see page 12). Fall term: sections M W F 8, 1:25, or 3:35; or T Th S 8, 9:05 10:10, or 11:15. Lectures M W 8, 11:15, 12:20, 2:30, or 3:35; or T Th 8, 12:20 or 2:30. Spring term: sections M W F 9:05 or 2:30; or T Th S 8 or 9:05. Lectures M W 8 or 12:20; or T Th 11:15 or 2:30.

Guided conversation, grammar drill, and oral and written composition. Emphasis is placed upon increasing the student's oral command of French.

### 204. INTERMEDIATE COMPOSITION

Either term. Credit three hours. Prerequisite, French 203. Fall term: sections M W F 11:15 or 2:30, or T Th S 9:05; lecture T Th 12:20. Spring term: sections M W F 8, 12:20, or T Th S 10:10 or 11:15; lectures M W 11:15 or 2:30, or T Th 8 or 12:20.

Continuation of the work of French 203, with special attention to accurate and idiomatic expression in French. Oral and written drill.

### 205. FRESHMAN SEMINAR: CONFESSIONAL WORKS IN FRENCH LITERATURE

Fall term. Credit three hours. Mrs. Parrish.

For description see Freshman Humanities Program, p. 25.

### 206. FRESHMAN SEMINAR: SARTRE AND CAMUS

Spring term. Credit three hours. Mrs. McCall.

For description see Freshman Humanities Program, p. 25.

### 208. THE RENAISSANCE IN FRANCE

Spring term. Credit three hours. Mr. Cave.

For description see Freshman Humanities Program, p. 25.

### 301-302. ELEMENTARY FRENCH FOR ARTS COLLEGE SENIORS

Throughout the year. Credit four hours a term. Prerequisite, satisfaction of language requirement for graduation and consent of the instructor. M W F 10:10.

Designed to impart a sound knowledge of the language for students who need it as a tool for research or who plan to go on to graduate school.

## 303. ADVANCED COMPOSITION AND CONVERSATION

Fall term. Credit four hours. Prerequisite, French 204, M W F 9:05. Mr. Béreaud and staff. Two additional sections, hours to be arranged.

Reading and analysis of selected texts in class in order to increase basic vocabulary and command of idiomatic French. Review of general grammar. An additional hour a week will be devoted to improving diction, and students who need it will be encouraged to do outside work equivalent to three twenty-minute periods per week in the laboratory or working with tapes at home. Weekly translations and short essays. Class conducted in French.

## 304. ADVANCED COMPOSITION AND CONVERSATION

Spring term. Credit four hours. Prerequisite 303 or consent of the instructor. M W F 9:05. Mr. Béreaud.

Continuation of the work in French 303.

## 386. POETRY OF THE ROMANTIC PERIOD

Spring term. Credit four hours. Prerequisite, French 201-202 or consent of the instructor. Th 2:30. Mr. Frey.

Interpretation of significant poems of Lamartine, Hugo, Vigny, Musset, and Nerval. Readings in some of the main critical documents of the period. Lectures in French, classroom discussion, written reports.

## 387. NINETEENTH-CENTURY PROSE FICTION: THE NOVEL AFTER 1850

Fall term. Credit four hours. Prerequisite, French 303-304 or consent of the instructor. M W F 10:10. Mr. Demorest.

Extensive reading in the works of Flaubert, Huysmans, Barbey d'Aurevilly, Jules Vallès, Zola, Maupassant, and Barrès. Attention to the novel as an all-encompassing genre and to the definitions of the artist's role in society. Lectures in French.

## 388. NINETEENTH-CENTURY PROSE FICTION: THE ROMANTIC NOVEL

Spring term. Credit four hours. M W F 12:20. Mr. Béreaud.

Readings from Madame de Staël, Chateaubriand, B. Constant, Nerval, Balzac, Stendhal, G. Sand, and Hugo. Class discussions, papers. Class conducted in French.

## 391. TWENTIETH-CENTURY DRAMA

Fall term. Credit four hours. Prerequisite, French 201-202 or consent of the instructor. M W F 11:15. Mrs. McCall.

New directions in dramatic theory and *mise en scène*. Critical studies of Jarry, Cocteau, Claudel, Giraudoux, Sartre, Beckett, Genet, and others. Lectures in French, classroom discussion, written reports.

## 398. THE TWENTIETH-CENTURY NOVEL

Spring term. Credit four hours. Prerequisite, French 201-202 or consent of the instructor. M W F 10:10. Mr. Grossvogel.

A sampling of the major French novelists from the early Gide to the later Robbe-Grillet in order to attempt a definition of the novel whereby the traditional and experimental forms of French fiction in the twentieth century might be examined. Lectures in French, classroom discussion, written reports.

[401-402. HISTORY OF THE FRENCH LANGUAGE]

Not offered in 1967-68.

Throughout the year in alternate years. Credit four hours a term. Prerequisites, Qualification in French and Linguistics 201. M W F 11:15. Mr. Benoit.

403. LINGUISTIC STRUCTURE OF FRENCH

Fall term. Credit four hours. Prerequisites, Qualification in French and Linguistics 201. M W F 3:35. Miss Asselin.

A descriptive analysis of present-day French, with emphasis on its phonetics, phonemics, morphology, and syntax. Required of students seeking certification by New York State.

THE COMPARATIVE STUDY OF THE ROMANCE LANGUAGES

(See Linguistics 441-442, 443-444, 445, 446, 449.)

404. FRENCH FOR TEACHERS

Spring term. Credit four hours. Prerequisite, Qualification in French. Hours to be arranged. Mr. Benoit and Mrs. Gordon.

Survey of current teaching methods, preparation of teaching materials, selection and use of textbooks and realia, further study of phonetics, syntax, and culture as needed. Required of students seeking certification by New York State.

429. STYLISTICS

Fall term. Credit four hours. Primarily for graduate students. Limited to ten students. Some qualified undergraduate majors will be admitted, as space permits. Prerequisite, (undergraduates) French 304; (graduates) placement at the departmental French language examination. T Th S 11:15 Mr. Seznec.

French 429 will normally be taken by all entering graduate students in French, with the exception of those exempted on the basis of the departmental examination, and those who, not being prepared to undertake work at the level of French 429, will be asked first to take French 303 or 304. French 429 is prerequisite to French 430. French 429 presupposes competence in the handling of French vocabulary, syntax, and idiom. The purpose is to teach historical subjects. Review of advanced grammar; translations from and into literary French; lexical, stylistic, and methodological study of selected French critical works; literary *explication de textes*; study of French versification; analysis of literary topics, and composition of outlines. Short daily or weekly papers. Conducted in French.

430. STYLISTICS

Spring term. Credit four hours. M W F 10:10. Mr. Béreaud.

For description see French 429.

447-448. MEDIEVAL LITERATURE

Throughout the year. Credit four hours. Prerequisite, two terms of 300 level French literature courses or consent of the instructor. May be entered either term. Fall term: M W F 9:05. Spring term: F 2:30-4:25 plus one hour to be arranged for students entering in the spring term without previous training in Old French. Miss Colby.

Translation of Old French texts into English and Modern French. The first term deals with the epic; the second term with the romance. Facility

in reading Old French and appreciation of these two major genres are the primary goals of this course, but some attention will be given to other important genres.

#### 450. TOPICS IN RENAISSANCE AND LITERATURE: HUMANISTS AND REFORMERS

Spring term. Credit four hours. Mr. T. C. Cave.

Studies in the sixteenth-century revolutions in French prose, French thought, and French society. Readings in the vernacular writings of such figures as Lefèvre d'Étaples, Budé, Bonaventure des Périers, Calvin, Amyot, Henri Estienne, Etienne Pasquier, Olivier de Serres, Jean Bodin; philological treatises; translations of Plutarch and Scripture; arts of poesy, husbandry, and venery; calls to faith; ideal republics. Occasional excursions into such authors as Pico della Mirandola, Erasmus, Thomas More, Luther. Readings in French history. Conducted in French.

#### 466. SEVENTEENTH-CENTURY POETRY

Spring term. Credit four hours. Prerequisite, French 201-202 and consent of the instructor. T Th S 9:05. Mr. Seznec.

Major poets of the first half of the century: Malherbe, Régner, Théophile, and Saint-Amant. New attitudes and positions, Baroque, Précieux, and official poetry. Renewals and contrasts; Racine and LaFontaine.

#### 479. TOPICS IN THE LITERATURE OF THE ENLIGHTENMENT: VOLTAIRE, DIDEROT, ROUSSEAU

Fall term. Credit four hours. W 1:25. Mr. Dieckmann.

#### 496. MODERN LITERATURE: CLAUDEL

Spring term. Credit four hours. W 1:25. Mr. Dieckmann.  
Poetry and drama.

#### 539. INTRODUCTION TO FRENCH PHILOLOGY

Fall term. Credit four hours. Required of all graduate students in French literature. Th 4:30-6:25. Miss Colby.

A study of the phonological, morphological, syntactical, and etymological developments which most frequently create problems for the student of literature.

#### 548. MEDIEVAL SEMINAR: CHRÉTIEN DE TROYES

Spring term. Credit four hours. Th 4:30-6:25. Miss Colby.

Close examination of Chrétien's *Perceval* followed by exploration of some of the differences between the *Perceval* and the work of its continuators.

#### 553. RENAISSANCE SEMINAR: MONTAIGNE AND HIS INFLUENCE

Fall term. Credit four hours. T 2:30-4:25. Mr. Dieckmann.

A study of selected essays dealing with the theme of the *Condition Humaine*: comparison with the treatment of this theme by later authors.

#### [554. GALLO-ROMANCE DIALECTOLOGY]

Not offered in 1967-68.

Spring term in alternate years. Credit four hours. Prerequisite, Linguistics 431-432, or 433-434, or consent of the instructor. T Th 2:30.

555. HISTORICAL PHONOLOGY OF FRENCH

Fall term in alternate years. Credit four hours. Prerequisite, Linguistics 201 or consent of the instructor. T Th 2:30.

The detailed study of sound changes from Latin to French, with attention to intermediate stages.

558. LINGUISTIC STRUCTURES OF OLD AND MIDDLE FRENCH

Spring term in alternate years. Credit four hours. Prerequisite, French 403 or consent of the instructor. T Th 2:30.

An attempt at synchronic linguistic analysis of the French of approximately A.D. 1100 and 1600.

563. SEVENTEENTH-CENTURY SEMINAR: PASCAL

Fall term. Credit four hours. M 1:25-3:20. Mr. Demorest.

A thorough reading of Pascal's nonscientific works aimed at a definition of his singular position in relation to twentieth-century ethics and criticism. Seminar conducted in French.

570. EIGHTEENTH-CENTURY SEMINAR: MARIVAUX

Spring term. Credit four hours. Th 1:25-3:20. Mrs. Parrish.

Topic: Marivaux, novelist and dramatist. A close study of the early novels and of selected plays. Problems to be considered: Marivaux's use of language, Marivaux as a transitional figure, and as an example of eighteenth-century existential thought.

574. EIGHTEENTH-CENTURY AESTHETICS

Spring term. Credit four hours. T 2:30-4:25. Mr. Dieckmann.

See Comparative Literature 520.

588. NINETEENTH-CENTURY SEMINAR: FLAUBERT

Spring term. Credit four hours. Mr. Demorest.

The two versions of the *Education Sentimentale* as forerunners of the contemporary novel. Students are expected to know thoroughly beforehand: *Madame Bovary* and *Les Trois Contes*. Seminar conducted in French.

597. GRADUATE SEMINAR IN TWENTIETH-CENTURY LITERATURE

Fall term. Credit four hours. M 2:30-4:25. Mr. Grossvogel.

Proust: A study of the major themes, techniques, and implications of *A la recherche du temps perdu*, as well as a review of the critical corpus concerned with that work.

599. SEMINAR IN VALÉRY

Fall term. Credit four hours. Th 2:30-4:25. Mr. Frey.

The prose and poetry of Valéry.

600. SEMINAR IN FRENCH LINGUISTICS

Offered in accordance with student needs. Credit four hours a term. Hours to be arranged. Mr. Hall.

629. INTRODUCTION TO LITERARY STUDIES

Fall term. Credit four hours. M W 2:30. Required of all first-year graduate students in romance studies. Mr. Selig.

639-640. SPECIAL TOPICS IN FRENCH LITERATURE

Throughout the year. Credit four hours a term. Hours to be arranged. Staff.

## German

Messrs. D. Bansberg, V. T. Bjarnar, E. A. Blackall, D. Connor, J. M. Cowan, J. B. Dallett, H. Deinert, Mrs. Else Fleissner, Mrs. Eleonore Frey, Messrs. O. J. M. Jolles, H. L. Kufner, P. Lowe, Jr., J. W. Marchand, A. Muschg, B. E. Pike, J. R. Puryear, and Staff.

For those not majoring in German, the prerequisite for admission to courses numbered 320 to 360 is German 201-202 or consent of the instructor. To obtain instructor's consent, students who have not completed German 201-202 will be required to show that they know sufficient German to follow with profit the course for which they wish to register.

For admission to a major in German, the prerequisites are both German 201-202 and 203-204. Students may apply for admission to the major while they are enrolled in these courses, but acceptance will be conditional on their completing these courses with a grade of C— or above. A prospective major should complete the Distribution requirements by the end of his sophomore year, but petitions will be considered.

For the major in German, the following courses are to be completed: German 303, 304, 405, and at least five other 300- or 400-level courses in German which should be a representative selection of courses in Germanic linguistics and/or German literature. The natural progression to the major is through 201-202 and 203-204.

The Honors program in German consists of an integrated plan designed for the individual student and culminating in an Honors essay. For admission to the Honors program a student must have a minimum average of B in German courses, and the consent of Mr. Jolles. The Honors Reading Courses (451 and 452) may form part of the Honors student's program.

The Distribution requirement in the humanities is satisfied in German by German 201-202 if this course is not used in fulfillment of the language requirement.

German 201-202 together with a 300- or 400-level sequence of two courses, or German 203-204, 303-304 would constitute a useful minor in German for those majoring in another field and for those proceeding to Graduate School. The attention of students majoring in German is called to the courses offered by the Department of Comparative Literature, many of which complement the course offerings in German. German majors may, if they wish, use comparative Literature courses to fulfill their second distribution requirement.

Of the courses listed below, those dealing with literature are staffed and administered by the Department of German Literature, and inquiries in regard to them ought to be addressed to that Department (172 Goldwin Smith).

The courses dealing with language and linguistics are offered by the Division of Modern Languages, and administered by that Division (136 Morrill Hall).

### 101. ELEMENTARY COURSE

Either term. Credit six hours. Students who have previously studied German should consult page 12 before registering for this course. Fall term: drill M-F 8, 9:05, 10:10, 11:15, or 12:20; lectures M W 9:05, W F 1:25, T Th 11:15. Spring term: drill M-F 8, 10:10, or 11:15; lecture T Th 9:05.

### 102. ELEMENTARY COURSE

Either term. Credit six hours. Students who have previously studied German should consult page 12 before registering for this course. Fall term: drill M-F 8 or 10:10; lecture T Th 9:05. Spring term: drill M-F 8, 9:05, 10:10, 11:15 or 12:20; lectures M W 9:05, 10:10, or T Th 9:05.

### 112. ELEMENTARY COURSE

Either term. Credit three hours. Prequalification course for students entering above the level of placement in German 102. Fall term: drill T Th S 9:05, 10:10, or 12:20; lecture F 10:10. Spring term: drill T Th S 9:05 or 12:20; lecture F 10:10.

### 121. ELEMENTARY READING COURSE

Fall term. Credit three hours. Open only to seniors (not in Arts and Sciences) with written permission from their colleges. Hours to be arranged.

Designed to help students planning to go to graduate school to acquire a reading knowledge of the language.

### 122. ELEMENTARY READING COURSE

Spring term. Credit three hours. Open only to seniors (not in Arts and Sciences) with written permission from their colleges. Prerequisite, German 121 or its equivalent. Hours to be arranged.

Designed to help students planning to go to graduate school to acquire a reading knowledge of the language.

### 151. ELEMENTARY GRADUATE READING COURSE

Fall term. Credit three hours. Open only to graduate students. Hours to be arranged.

Designed to help graduate students prepare for the Graduate Reading Examination administered by the Graduate School.

### 152. ELEMENTARY GRADUATE READING COURSE

Spring term. Credit three hours. Open only to graduate students. Prerequisite, German 151 or one year of college German or two years of high school German. Hours to be arranged.

Designed to help graduate students prepare for Graduate Reading Examination administered by the Graduate School.

### FRESHMAN SEMINAR IN GERMAN LITERATURE

(Comparative Literature 103-104)

(See Freshman Humanities Program, p. 26.)

### 201-202. INTRODUCTION TO GERMAN LITERATURE

The aim is to introduce the student to German literature through the reading of complete texts mainly from the nineteenth and twentieth centuries. The course is so designed that the student will increase his reading knowledge of German while developing a critical approach to literature. English will be used as much as necessary at the beginning; as the term



progresses, classes will be conducted more and more in German. While 201 is normally taken before 202, it is not a prerequisite for 202. Prerequisite for 201 or 202, Qualification in German (for definition of Qualification see page 12).

201. Either term. Credit three hours. Fall term: M W F 8:00, 9:05 or 11:15 or T Th S 9:05 or 10:10. Spring term: M W F 9:05 or 11:15 or T Th S 9:05 or 11:15. Messrs. Connor and Dallett, Mrs. Frey, Mr. Muschg, and Staff.

Topic: The German drama. The main emphasis of the course will be on dramatic works by Dürrenmatt, Brecht, Hofmannsthal, Büchner, Schiller, and Goethe.

202. Either term. Credit three hours. Fall term: M W F 9:05; or T Th S 9:05 or 11:15. Spring term: M W F 9:05 or 10:10; or T Th S 9:05 or 10:10. Messrs. Connor and Dallett, Mrs. Frey, Mr. Muschg, and Staff.

Topic: Nineteenth- and twentieth-century prose. The course will deal with complete prose works by Dürrenmatt, Kafka, Mann, Hofmannsthal, Hauptmann, Keller, Brentano, and Kleist.

### 203. INTERMEDIATE COMPOSITION AND CONVERSATION

Either term. Credit three hours. Prerequisite, Qualification in German (for definition of Qualification see page 12). Fall term: M W F 9:05 or 10:10; or T Th S 9:05 or 10:10. Lecture F 2:30. Spring term: M W F 9:05 or T Th S 9:05; lecture F 2:30.

Guided conversation and oral and written composition; with special attention to accurate and idiomatic expression in German.

### 204. INTERMEDIATE COMPOSITION AND CONVERSATION

Either term. Credit three hours. Prerequisite, German 203 or consent of the instructor. Fall term: M W F 12:20. Spring term: M W F 10:10 or 12:20; or T Th S 10:10.

Continuation of the work of German 203. Emphasis is placed on increasing the student's active vocabulary and command of grammatical patterns.

### 301-302. ELEMENTARY GERMAN FOR ARTS COLLEGE SENIORS

Throughout the year. Credit four hours a term. Prerequisite, satisfaction of language requirement for graduation and consent of the instructor. M W F 9:05 or T Th S 9:05.

Designed to impart a sound knowledge of the language for students who need it as a tool for research or who plan to go on to graduate school.

### 303. ADVANCED COMPOSITION AND CONVERSATION

Fall term. Credit four hours. Prerequisite, German 204 or consent of the instructor. T Th S 11:15.

Emphasis is placed upon increasing the student's oral and written command of German. Detailed study of present-day syntax.

### 304. ADVANCED COMPOSITION AND CONVERSATION

Spring term. Credit four hours. Prerequisite, German 303 or consent of the instructor. T Th S 11:15.

Further study of German syntax with emphasis on different levels of style. Selected texts will serve as the basis for practice in written and oral expression.

### 352. LESSING AND THE ENLIGHTENMENT

Spring term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor. M W F 9:05. Mr. Connor

[354. SCHILLER UND DIE DEUTSCHE KLASSIK]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor. M W F 9:05. Mr. Jolles. This course will be conducted in German.

355. THE YOUNG GOETHE

Fall term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor. T 11:15-1:10. Mrs. Fleissner.

A study of Goethe's development as a writer from the *Sturm und Drang* up to the Italian journey, with special reference to his poetry written before 1786, his *Götz von Berlichingen*, *Werther*, *Iphigenie*, *Torquato Tasso*, and *Egmont*.

356. THE LATER GOETHE

Spring term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor. It is recommended that students taking this course take 355 first. M W F 12:20. Mr. Blackall.

A study of Goethe's development after the Italian journey. A full study of *Faust* (Parts One and Two) and some of the later poetry will be included.

357. ROMANTICISM

Fall term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor. M W F 12:20. Mr. Blackall.

German literature in the first half of the nineteenth century, with special reference to the Romantic movement itself and its effect on the period 1830-1850.

[358. REALISM AND NATURALISM]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor. T Th S 9:05. Mr. Deinert.

359. PROSE FICTION FROM THOMAS MANN TO HEINRICH BÖLL

Fall term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor. W 1:25-3:20. Mrs. Fleissner.

[360. POETRY AND DRAMA FROM RILKE TO BRECHT]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, German 201-202 or consent of the instructor M W F 10:10.

401. HISTORY OF THE GERMAN LANGUAGE I

Fall term in alternate years. Credit four hours. Prerequisites, German 204 or consent of the instructor, and Linguistics 201 taken previously or concurrently. M W F 11:15. Mr. Kufner.

The relation of German to English and other Indo-European languages.

402. HISTORY OF THE GERMAN LANGUAGE II

Spring term in alternate years. Credit four hours. Prerequisite, German 401 or consent of the instructor. M W F 11:15. Mr. Lowe.

The development of the German language, i.e. its phonology, morphology, syntax, and lexicon up to about the year 1500.

## 403. LINGUISTIC STRUCTURE OF GERMAN

Fall term. Credit four hours. Prerequisites, German 204 or consent of the instructor, and Linguistics 201 taken previously or concurrently. M W F 10:10. Mr. Kufner.

A descriptive analysis of present-day German, with emphasis on its phonetics, phonemics, morphology, and syntax.

## 404. GERMAN FOR TEACHERS

Spring term. Credit four hours. Prerequisite, German 403. M W F 10:10. Mr. Kufner.

Methods of teaching the language based on a contrastive study of the structures of English and German. Extensive outside reading, reports on textbooks, discussion of various teaching aids and realia. Required for provisional New York State teacher certification.

## 405. INTRODUCTION TO MIDDLE HIGH GERMAN

Fall term. Credit four hours. Prerequisite, consent of the instructor. M W F 11:15. Mr. Puryear.

Intended for students with no previous knowledge of Middle High German; will begin with study of the Middle High German language and then proceed to the reading of selected texts.

## 406. MIDDLE HIGH GERMAN LITERATURE

Spring term. Credit four hours. Prerequisite, German 405. M W F 11:15. Mr. Puryear.

The main authors and literary trends of the Middle High German period will be discussed in connection with the reading of extensive selections from the works of the great epic and lyric poets between 1190 and 1230.

## [408. TOPICS IN EARLIER GERMAN LITERATURE: 1300-1700]

Not offered in 1967-68.

Spring term only. Credit four hours. Prerequisite, consent of the instructor. T Th S 11:15. Mr. Dallett.

## 410. TOPICS IN CLASSICISM AND ROMANTICISM

Spring term only. Credit four hours. Prerequisite, consent of the instructor. T Th 11:15. Mrs. Frey.

Topic: Heinrich von Kleist.

## 413-414. TOPICS IN MODERN GERMAN LITERATURE

Credit four hours a term. Prerequisite, consent of the instructor. Fall term: Th 11:15-1:10. Spring term. T Th 12:20. Mr. Muschg.

Topics: To be announced.

## 415. BIBLIOGRAPHY AND METHODS

Fall term. Credit four hours. Prerequisite, consent of the instructor. M W F 3:35. Mr. Marchand.

## 451-452. HONORS READING COURSE

Either term. Credit four hours a term. For Honors students only. Staff.

Extensive reading of texts supplementary to regular course work, under the direction of a member of the department, who will discuss the student's work with him four or five times a term.

## COURSES PRIMARILY FOR GRADUATE STUDENTS

Whereas 400-level courses are designed for undergraduate and graduate students, the 500-level courses are intended solely for graduate students.

For complete descriptions of graduate courses see *Announcement of the Graduate School*.

### 500. SPRECH- UND SCHREIBÜBUNGEN

Throughout the year. No credit. Hours to be arranged. Required of all graduate students in German studies unless they are exempted from the course on the basis of an examination. Fall term: Mrs. Fleissner. Spring term: Mrs. Frey.

### [501. INTRODUCTION TO GERMANISTIC LINGUISTICS]

Not offered in 1967-68.

Fall term in alternate years. Credit four hours. W 1:25 Mr. Puryear.

### [502. GOTHIC]

Not offered in 1967-68.

Spring term in alternate years. Credit four hours. W 1:25. Mr. Puryear.

### 503. OLD SAXON

Fall term in alternate years. Credit four hours. M W F 3:35. Mr. Puryear.

### 504. OLD HIGH GERMAN

Spring term in alternate years. Credit four hours. M W F 3:35. Mr. Puryear.

### 509. OLD NORSE I

Fall term. Credit four hours. Hours to be arranged. Mr. Bjarnar.

### 510. OLD NORSE II

Spring term. Credit four hours. Hours to be arranged. Mr. Bjarnar.

### 511. SAGAS

Fall term. Credit four hours. Prerequisite, German 510 or consent of the instructor. Hours to be arranged. Mr. Lowe.

### 512. EDDA

Spring term. Credit four hours. Prerequisite, German 510 or consent of the instructor. Hours to be arranged. Mr. Lowe.

### [521. MIDDLE HIGH GERMAN LITERATURE I]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, German 406 or consent of the instructor.

### 522. MIDDLE HIGH GERMAN LITERATURE II

Spring term. Credit four hours. Prerequisite, German 406 or consent of the instructor. M 1:25-3:20. Mr. Marchand.

Topic: The Quadrivium: its influence on Middle High German Literature with special reference to Gottfried von Strassburg.

### 523. GERMAN LITERATURE OF THE LATE MIDDLE AGES

Fall term. Credit four hours. M 1:25-3:20. Mr. Dallett.

Topic: German Mysticism. A study of mystical theory and practice in Germany from the thirteenth through the fifteenth century as reflected in original German texts and German translations of works by Mechthild von Magdeburg, Meister Eckehart, Johannes Tauler, Heinrich Seuse, and Nikolaus von Kues.

#### 526. SIXTEENTH-CENTURY GERMAN LITERATURE

Spring term. Credit four hours. W 1:25-3:20. Mr. Dallett.

Topic: Sixteenth-century German drama and its backgrounds.

#### 527. SEVENTEENTH-CENTURY GERMAN LITERATURE

Fall term. Credit four hours. W 1:25-3:20. Mrs. Frey.

Topic: Lyric poetry of the Baroque period.

#### 530. EIGHTEENTH-CENTURY LITERATURE OTHER THAN GOETHE

Spring term. Credit four hours. T 1:25-3:20. Mr. Jolles.

Topic: Schiller und der Sturm und Drang.

#### 531. GOETHE

Fall term. Credit four hours. Th 1:25-3:20. Mr. Blackall.

Topic: Goethe's experimental fiction. The course will concentrate on *Die Wahlverwandtschaften*, the *Novelle*, *Wilhelm Meisters Wanderjahre*, and *Dichtung und Wahrheit*.

#### 534. GERMAN ROMANTICISM

Spring term. Credit four hours. Th 1:25-3:20. Mr. Blackall.

Topic: The later romantics. The course will concentrate on four writers: Arnim, Brentano, Eichendorff, and Hoffmann.

#### [535. NINETEENTH-CENTURY GERMAN LITERATURE]

Not offered in 1967-68.

Fall term only. Credit four hours. Mr. Deinert.

#### 537. TWENTIETH-CENTURY GERMAN LITERATURE

Fall term. Credit four hours. T 1:25-3:20. Mr. Pike.

Topic: Thomas Mann.

#### [540. HISTORY AND METHODS OF MODERN GERMAN LITERARY CRITICISM]

Not offered in 1967-68.

Spring term. Credit four hours. Mr. Jolles.

#### COMPARATIVE GERMANIC LINGUISTICS

(See Linguistics 541-542)

### SEMINARS FOR GRADUATE STUDENTS

These seminars are intended for graduate students who are beyond the first year of their graduate study. Each seminar will deal with a specific topic in more detail than is possible in the graduate courses. The topics of the seminars will vary from year to year.

#### [601. GERMAN DIALECTOLOGY]

Not offered in 1967-68.

Fall term. Four hours credit. Hours to be arranged. Mr. Kufner.

[611. GERMANIC PALEOGRAPHY AND CODICOLOGY]

Not offered in 1967-68.

Fall term. Four hours credit. Hours to be arranged. Mr. Marchand.

[612. COMPARATIVE GERMANIC CULTURES]

Not offered in 1967-68.

Spring term. Four hours credit. Hours to be arranged. Mr. Marchand.

651. SEMINAR IN GERMANIC LINGUISTICS I

Fall term. Four hours credit. Th 1:25. Mr. Puryear.

652. SEMINAR IN GERMANIC LINGUISTICS II

Spring term. Four hours credit. Th 1:25. Mr. Puryear.

653-654. SEMINAR IN GERMAN LITERATURE

Throughout the year. Credit four hours a term. Hours to be arranged. Staff.

## Hindi

Messrs. G. H. Fairbanks, J. W. Gair, G. B. Kelley, and Staff.

101-102. ELEMENTARY COURSE

Throughout the year. Credit six hours a term. Drill, daily at 9:05; lecture, T Th 10:10.

201-202. HINDI READING

Throughout the year. Credit three hours a term. Prerequisite for 201, Qualification in Hindi; for 202, Hindi 201 or consent of the instructor. Hours to be arranged.

203-204. COMPOSITION AND CONVERSATION

Throughout the year. Credit three hours a term. Prerequisite for 203, Qualification in Hindi; for 204, Hindi 203 or consent of the instructor. Hours to be arranged.

301-302. READINGS IN HINDI LITERATURE

Throughout the year. Credit four hours a term. Prerequisite, Hindi 202. Hours to be arranged.

303-304. ADVANCED COMPOSITION AND CONVERSATION

Throughout the year. Credit four hours a term. Prerequisite, Hindi 204. Hours to be arranged.

305-306. ADVANCED HINDI READINGS

Throughout the year. Credit four hours a term. Prerequisite, Hindi 202. Hours to be arranged.

Intended for those who wish to do readings in history, government, economics, etc., instead of literature.

[401. HISTORY OF HINDI]

Not offered in 1967-68.

Fall term in alternate years. Credit four hours. Prerequisites, Hindi 101-102

or equivalent and Linguistics 202 or 302. Hours to be arranged. Mr. Fairbanks.

#### 600. SEMINAR IN HINDI LINGUISTICS

(See also Linguistics 331, 432, 521, 522, 530, 531, 532, 534.)

Either term. Credit three hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Fairbanks, Mr. Gair, or Mr. Kelley.

## Indonesian

Messrs. J. M. Echols, J. U. Wolff, and Staff.

#### 101-102. ELEMENTARY COURSE

Throughout the year. Credit six hours a term. Hours to be arranged.

#### 201-202. INDONESIAN READING

Throughout the year. Credit three hours a term. Prerequisite for 201, Qualification in Indonesian; for 202, Indonesian 201 or consent of the instructor. Hours to be arranged.

#### 203-204. COMPOSITION AND CONVERSATION

Throughout the year. Credit three hours a term. Prerequisite for 203, Qualification in Indonesian; for 204, Indonesian 203 or consent of the instructor. Hours to be arranged.

#### 301. READINGS IN INDONESIAN AND MALAY

Either term. Credit four hours. Prerequisite, Indonesian 201-202 or the equivalent. Hours to be arranged.

#### 302. READINGS IN INDONESIAN AND MALAY

Either term. Credit four hours. Prerequisite, Indonesian 301. Hours to be arranged.

#### 303. ADVANCED INDONESIAN CONVERSATION AND COMPOSITION

Either term. Credit four hours. Prerequisite, Indonesian 204 or the equivalent. Hours to be arranged.

#### 305. ADVANCED READINGS IN INDONESIAN AND MALAY LITERATURE

Either term. Credit four hours. Prerequisite, Indonesian 302 or consent of the instructor.

#### 403. LINGUISTIC STRUCTURE OF INDONESIAN

Either term. Credit four hours. Prerequisites, Indonesian 101-102 or the equivalent, and Linguistics 201. Hours to be arranged. Mr. Wolff.

#### MALAYO-POLYNESIAN LINGUISTICS

(See Linguistics 573-574)

#### SOUTHEAST ASIAN LITERATURE IN TRANSLATION

(See Comparative Literature 380)

## Italian

Messrs. G. P. Biasin, J. Freccero, Mrs. Anita Grossvogel, Mr. R. A. Hall, Jr., and Staff.

For a major in Italian, consult Mr. Biasin and Mr. Hall.

### 101-102. ELEMENTARY COURSE

Throughout the year. Credit six hours a term. Drill, M-F at 8, 12:20, or 1:25; lecture T Th 10:10.

### 151-152. ELEMENTARY GRADUATE READING COURSE

Throughout the year. Credit three hours a term. Hours to be arranged. Staff.

### 203. COMPOSITION AND CONVERSATION

Fall term as required. Credit three hours. Prerequisite, Qualification in Italian. T Th 1:25-3.

Guided conversation, grammar drill, and oral and written composition. Emphasis is placed on increasing the student's oral and written command of Italian.

### 204. COMPOSITION AND CONVERSATION

Spring term as required. Credit three hours. Prerequisite, Italian 203. T Th 1:25-3.

Continuation of the work of Italian 203, with special attention to accurate and idiomatic expression in Italian. Oral and written drill.

### 221-222. ELEMENTARY COURSE

Throughout the year. Credit three hours a term. Prerequisite, satisfaction of the language requirement in a romance language or Latin. M W F 2:30.

### 304. ADVANCED COMPOSITION AND CONVERSATION

Given as required. Credit two to four hours. Prerequisite, Italian 204. Hours to be arranged.

### 345-346. DANTE

Throughout the year. Credit four hours a term. Prerequisite, reading knowledge of Italian and consent of the instructor. Mr. Freccero.

### 380. THE ROMANTIC PERIOD

Spring term. Credit three hours. Prerequisite, consent of the instructor. T Th 3:35. Mr. Biasin.

Foscolo, Manzoni, Leopardi. Lectures and readings in Italian.

### [431. STRUCTURE OF ITALIAN]

Not offered in 1967-68.

Fall term in alternate years. Credit four hours. Prerequisite, Qualification in Italian. M W F 9:05. Mr. Hall.

### [432. ITALIAN DIALECTOLOGY]

Not offered in 1967-68.

Spring term in alternate years. Credit four hours. M W F 9:05. Mr. Hall.

### [433. OLD ITALIAN TEXTS]

Not offered in 1967-68.



Fall term in alternate years. Credit four hours. Prerequisite, consent of the instructor. M W F 9:05. Mr. Hall.

[434. HISTORY OF THE ITALIAN LANGUAGE]

Not offered in 1967-68.

Spring term in alternate years. Credit four hours. Prerequisites, Qualification in Italian and Linguistics 201. M W F 9:05. Mr. Hall.

488. THE LATE NINETEENTH-CENTURY NOVEL

Spring term. Credit four hours. Prerequisite, consent of the instructor. W 2:30-4:30. Mr. Biasin.

Giovanni Verga and Verismo.

546. SPECIAL TOPICS IN THE DIVINE COMEDY

Spring term. Credit four hours. W 4:30-6:30. Mr. Freccero.

Topic to be announced.

596. EUGENIO MONTALE

Spring term. Credit four hours. Prerequisite, consent of the instructor. T 11:15-1:10. Mr. Biasin.

A seminar on the poet's complete work. Readings, lectures, discussions in Italian.

600. SEMINAR IN ITALIAN LINGUISTICS

Offered in accordance with student needs. Credit four hours. Mr. Hall.

639-640. SPECIAL TOPICS IN ITALIAN LITERATURE

Throughout the year. Credit four hours. Hours to be arranged. Staff.

## Japanese

Mr. J. McCoy and Staff.

101-102. ELEMENTARY COURSE

Throughout the year. Credit six hours a term. Hours to be arranged.

201-202. JAPANESE READING

Throughout the year. Credit three hours a term. Prerequisite for 201, Qualification in Japanese; for 202, Japanese 201 or consent of the instructor. Hours to be arranged.

203-204. COMPOSITION AND CONVERSATION

Throughout the year. Credit three hours a term. Prerequisite for 203, Qualification in Japanese; for 204, Japanese 203 or consent of the instructor. Hours to be arranged.

301-302. SELECTED READINGS IN JAPANESE

Throughout the year. Credit four hours a term. Prerequisite, Japanese 201-202 or consent of the instructor. Hours to be arranged.

Emphasis is on Koogo style but Buñgo style is introduced in the second term.

305-306. INTRODUCTION TO CLASSICAL JAPANESE

Throughout the year. Credit four hours a term. Prerequisite, Japanese 301-302 or consent of the instructor. Hours to be arranged.

Emphasis on *Bun*go and *Kan*bu styles of literature.

401-402. JAPANESE READING FOR STUDENTS OF CHINESE

Throughout the year. Credit three hours a term. Prerequisite, reading knowledge of Chinese and consent of the instructor. Hours to be arranged. Mr. McCoy.

An introduction to the grammar of modern written Japanese and readings in selected scholarly texts. Designed specifically to enable the student to follow Japanese research published in his own field and to assist him in using the Japanese books, journals, and reference works appropriate to Chinese studies.

404. LINGUISTIC STRUCTURE OF JAPANESE

Spring term. Credit four hours. Prerequisites, Japanese 401, consent of the instructor, and Linguistics 201. Hours to be arranged. Mr. McCoy.

A descriptive analysis of present-day Japanese, with emphasis on its phonetics, phonemics, morphology, and syntax. Relevant historical aspects of Japanese will also be covered.

## Javanese

Messrs. J. M. Echols, J. U. Wolff, and Staff.

221-222. ELEMENTARY COURSE

Throughout the year. Credit three hours a term. Prerequisite, Qualification in Indonesian. Hours to be arranged.

[223-224. INTERMEDIATE COURSE]

Not offered in 1967-68.

Throughout the year. Credit three hours a term. Prerequisite, Javanese 222 or the equivalent. Hours to be arranged.

## Linguistics

Mr. F. B. Agard, Miss Claire Asselin, Messrs. L. J. Benoit, N. C. Bodman, W. L. Chafe, J. M. Cowan, C. L. Eastlack, J. M. Echols, G. H. Fairbanks, F. A. Foos, J. W. Gair, J. E. Grimes, R. A. Hall, Jr., C. F. Hockett, R. B. Jones, Jr., G. B. Kelley, H. L. Kufner, R. L. Leed, A. L. Lipson, A. G. Lozano, P. Lowe, Jr., J. W. Marchand, J. McCoy, G. M. Messing, J. R. Puryear, M. D. Saltarelli, D. S. Solá, D. S. Stark, J. U. Wolff, and Staff.

Linguistics 201-202 satisfies the Distribution requirement in the social sciences.

The major in linguistics has three prerequisites: (1) Linguistics 201-202; (2) Qualification in two languages, one from the familiar European group (Latin, Greek, French, Italian, Portuguese, Spanish, German, Russian) and one from the other languages offered at Cornell, with six

hours beyond Qualification in one or the other of these two; (3) a two-semester sequence in a related discipline (e.g. the literature of the language in which six hours beyond Qualification was offered as a prerequisite, anthropology, computer science, mathematics, philosophy, psychology, or sociology). The major will require completion of Linguistics 303, 403-404 plus 12 hours in linguistics at the 400 or 500 level chosen in consultation with the adviser. Prospective majors should consult Mr. Gair.

#### 201-202. INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE

Throughout the year. Credit three hours a term. M W F 9:05 or 10:10. Mr. Kelley.

An introductory survey course designed to acquaint the student with the nature of human language and with its systematic study.

#### 207. PRACTICAL PHONETICS

Fall term. Credit three hours. Prerequisite, Linguistics 202. Hours to be arranged. Mr. Agard.

#### 301-302. THE STRUCTURE OF ENGLISH

Throughout the year. Credit four hours a term. Hours to be arranged. Mr. Cowan and Staff.

Modern structural analysis of English in the first term. In the second term, comparative analysis using the various contrastive sketches of English and other languages recently published. Emphasis will be on the teaching of English as a second language.

#### 303. PHONOLOGY

Fall term. Credit four hours. Hours to be arranged. Mr. Agard.

#### 304. MORPHOLOGY

Spring term. Credit four hours. Hours to be arranged. Mr. Agard.

#### 305. LANGUAGE STRUCTURES

Fall term. Credit four hours. Hours to be arranged. Mr. Grimes.

#### 306. SYNTAX

Spring term. Credit four hours. Hours to be arranged. Mr. Grimes.

#### 331. INDIA AS A LINGUISTIC AREA

Fall term in alternate years. Credit four hours. Prerequisite, Linguistics 202. Hours to be arranged. Mr. Gair.

#### 403-404. ANALYTIC TECHNIQUES

Throughout the year. Credit four hours a term. Prerequisite, Linguistics 201-202. M W F 10:10. Mr. Chafe and Staff.

A practical training course in the techniques of observation and analysis of descriptive linguistics.

#### 413. LINGUISTIC DATA PROCESSING

Fall term. Credit two hours. Prerequisite, Linguistics 201 and consent of the instructor. M 1:25-3:20, laboratory hour to be arranged. Mr. Kelley.

A brief survey of general computer design and techniques and elementary training in the FORTRAN language, stressing logical operations and character manipulation. Attention will be given to the computability of linguistic problems, and students will be expected to work up solutions to problems from their own data. Introduction will be made to other computer languages (CODAP, COMIT) as time allows. This course is intended to provide emphasis on aspects of programming and computability of problems of interest to linguists which are not stressed in general, numerically oriented courses.

#### 432. INDO-ARYAN STRUCTURES

Spring term in alternate years. Credit four hours. Prerequisite, Linguistics 201. Hours to be arranged. Mr. Gair.

A synchronic examination of the phonological and grammatical structures of major Indo-Aryan languages. Typological studies in the languages of the family.

#### 436. DRAVIDIAN STRUCTURES

Spring term in alternate years. Credit four hours. Prerequisite, Linguistics 201. Hours to be arranged. Mr. Kelley.

A synchronic examination of the chronological and grammatical structures of the major languages of the family. Typological studies in Dravidian languages.

#### [441-442. HISTORY OF THE ROMANCE LANGUAGES]

Not offered in 1967-68.

Throughout the year in alternate years. Credit four hours a term. T Th 2:30-4. Mr. Hall.

#### 443-444. COMPARATIVE ROMANCE LINGUISTICS

Throughout the year in alternate years. Credit four hours a term. T Th 1:25-3. Mr. Hall.

The family of Romance languages; the application of the comparative method and the reconstruction of Proto-Romance speech. The relation between Proto-Romance and Old and Classical Latin.

#### [445. PROBLEMS AND METHODS IN ROMANCE LINGUISTICS]

Not offered in 1967-68.

Fall term every third year. Credit four hours. M W F 9:05. Mr. Hall.

Examination of selected samples of various methodologies in Romance linguistics, with reports and discussion.

#### [446. ROMANCE DIALECTOLOGY]

Not offered in 1967-68.

Spring term every third year. Credit four hours. M W F 9:05. Mr. Hall.

Examination of various types of dialectological description; study of overall relation among Romance dialects.

#### 449. AREAL TOPICS IN ROMANCE LINGUISTICS

Fall term every third year. Credit four hours. Course may be repeated. Hours to be arranged.

Reading of texts and study of relationships of each area (Dalmatian, Roumanian, Provençal, Sardinian, Catalan).

#### ETHNOLINGUISTICS AND PSYCHOLINGUISTICS

(Anthropology 461)

## HISTORICAL GRAMMAR OF GREEK AND LATIN

(Classical Linguistics 421-422)

## COURSES PRIMARILY FOR GRADUATE STUDENTS

## 502. COMPARATIVE METHODOLOGY

Spring term in alternate years. Credit four hours. Prerequisite, Linguistics 201-202. Hours to be arranged. Mr. Agard.

A study of the methods and techniques in comparative linguistics; application of these methods to various language families depending on the student's background.

## 504. HISTORY OF LINGUISTICS

Spring term. Credit four hours. Prerequisite, consent of the instructor. W 1:25-3:20. Mr. Hall.

## 505. LITERATURE, LANGUAGE, AND CULTURE

Fall term. Credit four hours. W 1:25-3:20. Mr. Hall.

A survey of the relation of literature to its linguistic medium and cultural matrix.

## 506. PIDGIN AND CREOLE LANGUAGES

Spring term. Credit four hours. Hours to be arranged. Mr. Hall.

A survey of the field of pidginized and creolized languages, with discussion of methodological problems, historical relationships, and reading of selected texts.

## 507-508. FIELD METHODS AND LINGUISTIC TYPOLOGY

Throughout the year. Credit four hours a term. Prerequisite for 507, Linguistics 404. Hours to be arranged. Mr. Hockett.

## 511-512. ACOUSTICAL PHONETICS

Throughout the year. Credit four hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Cowan.

A rapid survey of the techniques of experimental articulatory phonetics; the speech mechanism as a sound generator; sound recording techniques, and the methods of general acoustics; application of acoustical analysis to the study of speech sounds. Requires no mathematical training beyond arithmetical computation; the necessary mathematical operations for acoustical analysis will be developed for the students by the instructor.

## 513-514. TRANSFORMATIONAL ANALYSIS

Throughout the year. Credit four hours a term. Hours to be arranged. Miss Asselin.

An introduction to the theory, literature, and practice.

## 516. LITERACY

Spring term. Credit four hours. Prerequisite, Linguistics 201. T Th 2:30-3:45. Mr. Solá.

Discussion of the linguistic, as well as psychological, cultural, and pedagogical aspects of the reading process, with attention to distribution of literary skills in the world's population; variety of alphabets and other symbol systems in use; sociolinguistic and economic factors contributing to the achievement

and maintenance of mass literacy; relationship between verbal and reading skills; relevant basic and applied research in psychology and linguistics.

[521-522. COMPARATIVE INDO-EUROPEAN LINGUISTICS]

Not offered in 1967-68.

Throughout the year in alternate years. Credit four hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Fairbanks.

[530. ELEMENTARY PALI]

Not offered in 1967-68.

Either term as needed. Credit three hours. Hours to be arranged. Mr. Gair.

531-532. ELEMENTARY SANSKRIT

Throughout the year in alternate years. Credit three hours a term. Hours to be arranged. Mr. Fairbanks.

[534. COMPARATIVE INDO-ARYAN]

Not offered in 1967-68.

Spring term in alternate years. Credit four hours. Prerequisite, Linguistics 202 and 102, or equivalent of an Indo-Aryan language. Hours to be arranged. Mr. Fairbanks.

[536. COMPARATIVE DRAVIDIAN]

Not offered in 1967-68.

Spring term in alternate years. Credit four hours. Prerequisite, Linguistics 202 and 102, or equivalent of a Dravidian language. Hours to be arranged. Mr. Kelley.

[537-538. OLD JAVANESE]

Not offered in 1967-68.

Throughout the year. Credit four hours a term. Hours to be arranged. Mr. Echols.

[541-542. COMPARATIVE GERMANIC LINGUISTICS]

Not offered in 1967-68.

Throughout the year in alternate years. Credit four hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Marchand.

[561-562. COMPARATIVE SLAVIC LINGUISTICS]

Not offered in 1967-68.

Throughout the year in alternate years. Credit four hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Foos.

571-572. SEMINAR IN SOUTHEAST ASIAN LINGUISTICS

Throughout the year. Credit four hours a term. Prerequisites, Linguistics 201-202 and consent of the instructor. Hours to be arranged. Mr. Jones.

Descriptive and comparative studies of mainland Southeast Asian languages are dealt with in alternate terms. Topics may be selected in accordance with the interests of the students.

573-574. MALAYO-POLYNESIAN LINGUISTICS

Throughout the year. Credit four hours a term. Prerequisites, Linguistics 201-202 and consent of the instructor. Hours to be arranged. Mr. Wolff.

#### 581-582. SINO-TIBETAN LINGUISTICS

Throughout the year. Credit four hours a term. Prerequisite, Linguistics 201-202 or Chinese 402-403 and consent of the instructor. Hours to be arranged. Mr. Bodman.

Descriptive and comparative studies of Chinese dialects and Tibeto-Burman languages.

#### 600. SEMINAR

Each term. Admission by permission of the instructor. Hours and credits to be arranged. Various members of the Staff.

Subject to the needs of students and to the limitations of staff time, advanced seminars are set up in a wide variety of topics, which, in the past, have included such as the following: contemporary grammatical theory, applied linguistics in language teaching, applied linguistics in literary training and orthography formation, English grammar, problems and methods of Romance linguistics, Romance linguistic geography, Old Provençal texts, Old Italian texts, problems of Romance genealogy, Romance-based Creoles, German dialects, and field methods in phonology.

#### 615-616. DIRECTED RESEARCH

### Portuguese

Messrs. F. B. Agard, G. Cintra, C. L. Eastlack, and Staff.

#### 101-102. ELEMENTARY COURSE

Throughout the year. Credit six hours a term. M-F 2:30, plus two hours to be arranged.

#### 203-204. COMPOSITION AND CONVERSATION

Throughout the year. Credit three hours a term. Prerequisite for 203, Qualification in Portuguese; for 204, Portuguese 203 or consent of the instructor. M-F 11:15.

#### 221-222. ELEMENTARY COURSE

Throughout the year. Credit three hours a term. Prerequisite, Qualification in Spanish and consent of the instructor. M W F 10:10.

A basic course designed principally for students majoring in Spanish or interested especially in Portugal or Brazil. Phonology, grammar, listening comprehension, and reading.

#### 303. ADVANCED COMPOSITION AND CONVERSATION

Fall term. Credit four hours. Prerequisite, Portuguese 204. Hours to be arranged.

#### 304. ADVANCED COMPOSITION AND CONVERSATION

Spring term. Credit four hours. Prerequisite, Portuguese 303. Hours to be arranged.

#### 305-306. ADVANCED READINGS

Throughout the year. Credit four hours a term. Prerequisite, Portuguese 304. Hours to be arranged.

Designed for students needing further practice in reading Portuguese that is not literary.

## Quechua

D. F. Solá.

### 221-222. ELEMENTARY COURSE

Throughout the year. Credit three hours a term. Prerequisite, satisfaction of the language requirement in Spanish and consent of the instructor. Hours to be arranged.

A basic course in the Cuzco dialect of Quechua, emphasizing auditory comprehension and verbal control.

### 600. SEMINAR IN QUECHUA LINGUISTICS

Either term. Admission by permission of the instructor. Hours and credits to be arranged. Mr. Solá.

## Russian

Miss Patricia Carden, Messrs. F. Foos, G. Gibian, Miss Antonia Glasse, Mr. M. Horwitz, Mrs. Augusta L. Jaryc, Messrs. R. L. Leed, A. L. Lipson, H. M. Olmsted, Mrs. Marla Wykoff, and Staff.

Russian majors study Russian language, literature, and linguistics, with emphasis placed in accordance with their specific interests.

It is desirable, although not necessary, for a prospective major to complete Russian 101-102, 201-202, 203-204 as a freshman or sophomore since these courses are prerequisite to most of the junior and senior courses which count toward the major. A student may be admitted to the major upon satisfactory completion of Russian 102 or the equivalent.

Students who elect to major in Russian should consult with Mr. Gibian and Mr. Leed as soon as possible.

Students taking Honors in Russian undertake individual reading and research, write an Honors essay, and take a comprehensive examination at the end of the senior year.

For a major in Russian a student will be required to complete: (1) Russian 303-304 or the equivalent; (2) 24 hours from 300- and 400-level literature and linguistics courses of which 12 hours must be in literature in the original.

Prospective teachers of Russian in secondary schools should take Linguistics 201 while a freshman or sophomore, followed by Russian 403-404.

For Distribution Russian 201-202 may *not* be counted as a course in literature.

Of the courses listed below, those dealing with literature are staffed and administered by the Department of Russian Literature, and inquiries in regard to them ought to be addressed to that Department (191 Goldwin Smith).

The courses dealing with language and linguistics are offered by the Division of Modern Languages, and administered by that Division (133 Morrill Hall).



101. ELEMENTARY COURSE

Either term. Credit six hours. Students who have previously studied Russian should consult page 12 before registering for this course. Fall term: drill, M-F 8, 9:05, 10:10, 11:15, or 12:20; lecture M W 2:30 or T Th 11:15. Spring term: drill, M-F 8 or 11:15; lecture M W 9:05.

102. ELEMENTARY COURSE

Either term. Credit six hours. Prerequisite, Russian 101 or its equivalent. Fall term: drill, M-F 8 or 11:15; lecture M W 10:10. Spring term: drill, M-F 8, 9:05, 10:10, or 12:20; lecture M W 2:30 or T Th 11:15.

112. ELEMENTARY COURSE

Either term. Credit three hours. Prequalification course for students entering above the level of placement in Russian 102. Hours to be arranged.

121. ELEMENTARY READING COURSE

Fall term. Credit three hours. Open only to seniors (not in Arts and Sciences) with written permission from their colleges. Hours to be arranged.

Designed to help students planning to go to graduate school to acquire a reading knowledge of the language.

122. ELEMENTARY READING COURSE

Spring term. Credit three hours. Open only to seniors (not in Arts and Sciences) with written permission from their colleges. Prerequisite, Russian 121 or its equivalent. Hours to be arranged.

Designed to help students planning to go to graduate school to acquire a reading knowledge of the language.

151. ELEMENTARY GRADUATE READING COURSE

Fall term. Credit three hours. Open only to graduate students. Hours to be arranged.

Designed to help students prepare for the Graduate Reading Examination administered by the Graduate School.

152. ELEMENTARY GRADUATE READING COURSE

Spring term. Credit three hours. Open only to graduate students. Prerequisite, Russian 151 or consent of the instructor. Hours to be arranged.

Designed to help students prepare for the Graduate Reading Examination administered by the Graduate School.

201. RUSSIAN READING

Either term. Credit three hours. Prerequisite, Qualification in Russian (for definition of Qualification see page 12). Fall term: M W F 10:10 or T Th S 10:10. Spring term: M W F 3:35.

202. RUSSIAN READING

Either term. Credit three hours. Prerequisite, Russian 201. Fall term: M W F 3:35. Spring term: M W F 10:10 or T Th S 10:10.

203. COMPOSITION AND CONVERSATION

Fall term. Credit three hours. Prerequisite, Qualification in Russian (for definition of Qualification see page 12). M W F 11:15, 12:20, 2:30, plus lectures at T Th 9:05 or 10:10.

204. COMPOSITION AND CONVERSATION

Spring term. Credit three hours. Prerequisite, Russian 203. M W F 11:15, 12:20, 2:30, plus lectures at T Th 9:05 or 10:10.

301-302. ELEMENTARY RUSSIAN FOR ARTS COLLEGE SENIORS

Throughout the year. Credit four hours a term. Prerequisite, satisfaction of language requirement for graduation and consent of the instructor. M W F 2:30 or 3:35. Mr. Olmsted.

Designed to impart a sound knowledge of the language for students who need it as a tool for research or who plan to go on to graduate school.

303-304. ADVANCED COMPOSITION AND CONVERSATION

Throughout the year. Credit four hours a term. Prerequisite for 303, Russian 204. Section 1, M W F 11:15 plus one hour to be arranged; section 2, four hours to be arranged.

Emphasis is placed upon increasing the student's oral and written command of Russian. Advanced grammar, syntax, usage, idiomatic expressions. Oral reports, group discussion, selected readings of classic and Soviet writers.

305-306. ADVANCED READINGS

Throughout the year. Credit four hours a term. Prerequisite, Russian 202. Hours to be arranged. Mrs. Jaryc.

Designed for students needing further practice in reading Russian that is not literary.

RUSSIAN LITERATURE

(Comparative Literature 207-208)

In translation. Throughout the year. Credit three hours a term. M W F 12:20. Miss Carden.

292. SUPERVISED READING IN RUSSIAN LITERATURE

Either term. Variable credit. By invitation of the Department.

THE RUSSIAN NOVEL

(Comparative Literature 367)

In translation. Fall term. Credit four hours. T Th S 9:05. Mr. Gibian.

Turgenev, Tolstoy, Dostoevsky.

SOVIET LITERATURE

(Comparative Literature 368)

In translation. Spring term. Credit four hours. M W F 10:10. Mr. Horwitz.

314. INTELLECTUAL BACKGROUND OF RUSSIAN LITERATURE, 1750-1900.

Spring term. Credit four hours. Hours to be arranged. Miss Glasse.

Rise of Romanticism. Slavophiles. Western influences. Conducted in English, but reading knowledge of Russian required. Open to graduate students.

331. RUSSIAN POETRY

Fall term. Credit four hours. Prerequisites, Russian 202 and consent of the instructor. T Th 2:30 and one hour to be arranged. Mr. Gibian.

332. RUSSIAN THEATER AND DRAMA

Fall term. Credit four hours. Hours to be arranged. Miss Glasse.

Survey of the history of the Russian drama from the eighteenth century to the present. Fonvizin. Griboedov. Gogol. Ostrovsky. Chekhov. Soviet dramatists. Conducted in English, but reading knowledge of Russian required. Open to graduate students.

### 334. THE RUSSIAN SHORT STORY

Spring term. Credit four hours. T Th 2:30 and one hour to be arranged. Prerequisite, Russian 202 and consent of the instructor. Miss Carden.

Gogol, Turgenev, Chekhov, and others.

### [401-402. HISTORY OF THE RUSSIAN LANGUAGE]

Not offered in 1967-68.

Throughout the year in alternate years. Credit four hours a term. Prerequisites, Qualification in Russian, and Linguistics 201-202. M W F 2:30. Mr. Leed.

### 403. LINGUISTIC STRUCTURE OF RUSSIAN

Fall term in alternate years. Credit four hours. Prerequisites, Qualification in Russian, and Linguistics 201. M W F 2:30. Mr. Leed.

A descriptive study and analysis of Russian linguistic structure, morphology, and syntax.

### 404. RUSSIAN FOR TEACHERS

Spring term in alternate years. Credit four hours. Prerequisites, Qualification in Russian, Linguistics 201, and Russian 403. M W F 2:30. Mr. Leed.

Methods of teaching the language based on a contrastive study of the structures of English and Russian. Extensive outside reading, reports on textbooks, discussion of various teaching aids and realia. Required for provisional New York State teacher certification.

### 421. SUPERVISED READING AND RESEARCH

Either term. Variable credit. By permission of the Department.

### [431. RUSSIAN PROSE FICTION]

Not offered in 1967-68.

Fall term in alternate years. Credit four hours. Prerequisites, Russian 332 or 334 or the equivalent, and consent of the instructor. T Th 2:30 and one hour to be arranged. Miss Carden.

### 432. PUSHKIN

Spring term. Credit four hours. Prerequisite, consent of the instructor. T Th 1:25, and one hour to be arranged. Mr. Gibian.

### 435. GOGOL

Fall term. Credit four hours. Prerequisites, Russian 332 or 334 or the equivalent, and consent of the instructor. M W F 10:10. Mr. Horwitz.

### 493. HONORS ESSAY TUTORIAL

Either term. Credit four hours.

## COURSES PRIMARILY FOR GRADUATE STUDENTS

For complete descriptions of graduate courses see the *Announcement of the Graduate School*.

## 202 SINHALESE

### 501. OLD BULGARIAN

Fall term in alternate years. Credit four hours. Hours to be arranged. Mr. Foos.

### 502. OLD RUSSIAN

Spring term in alternate years. Credit four hours. Hours to be arranged. Mr. Foos.

### 517-518. RUSSIAN STYLISTICS

### 520. STUDIES IN RUSSIAN POETRY

### 521. RUSSIAN LITERATURE FROM THE BEGINNINGS TO 1700

### 522. EIGHTEENTH-CENTURY LITERATURE

### 523. EARLY NINETEENTH-CENTURY LITERATURE

### 534. TOPICS IN RUSSIAN SYMBOLISM

## GRADUATE SEMINARS

### 600. SEMINAR IN SLAVIC LINGUISTICS

Offered in accordance with student needs. Credit four hours. Hours to be arranged. Mr. Leed, Mr. Olmsted, or Mr. Foos.

### 601. INTRODUCTION TO GRADUATE STUDY

### 611. SEMINAR IN RUSSIAN DIALECT GEOGRAPHY

Fall term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Leed.

Study of the principal divisions of Russian dialects, the history of their development, their synchronic relationship, and the analysis of phonological, grammatical, and lexical isoglosses. Practical work in transcribing. Relationship of regional dialects to the standard language. Interpretation of the Russian Dialect Atlas.

### 671. SEMINAR IN TWENTIETH-CENTURY RUSSIAN LITERATURE

### 672. SEMINAR IN NINETEENTH-CENTURY RUSSIAN LITERATURE

## Serbo-Croatian

Mr. R. L. Leed.

### 221-222. ELEMENTARY COURSE

Throughout the year. Offered according to demand. Credit three hours a term. Prerequisite, Qualification in Russian and consent of the instructor. Hours to be arranged. Mr. Leed.

## Sinhalese

Messrs. G. H. Fairbanks, J. W. Gair, and Staff.

(See also Linguistics 331, 432, 521, 522, 530, 531, 532, 534.)

**101-102. ELEMENTARY COURSE**

Throughout the year. Credit six hours a term. Hours to be arranged.

**201-202. SINHALESE READING**

Throughout the year. Credit three hours a term. Prerequisite, Qualification in Sinhalese. Hours to be arranged.

## Spanish

Messrs. F. B. Agard, C. Bandera, J. S. Bernstein, D. Brenes, Mrs. Amanda Chacona, Messrs. J. Kronik, A. G. Lozano, D. Nasjleti, M. D. Saltarelli, K.-L. Selig, D. F. Solá and Staff.

The Spanish major is designed to give the student oral control of the language, adequate proficiency in its written expression, and a creditable knowledge of the literature and culture of Spain and Spanish America.

Satisfactory completion of the major should enable the student to meet language requirements for a provisional teaching certificate, to do graduate work in Spanish, or to satisfy government standards for acceptance into training programs of the U. S. State Department and other agencies.

For a major in Spanish the following are to be completed: (1) prerequisites: Spanish 201 and Spanish 204 or its equivalent; (2) acceptance by Mr. Brenes; (3) major courses: Spanish 303-304, 311-312, 403; (4) six additional courses to be taken from the following: Spanish 384, 397-398, 401-402, 419-420, 429-430, 440, 455, 457-458, 466, 489.

The Distribution requirement in the Humanities is satisfied in Spanish by any two of the following courses: Spanish 201, 311, 312; but no course may be counted if it is used in fulfillment of the language requirement.

Of the courses listed below, those dealing with literature are staffed and administered by the Department of Romance Studies, and inquiries in regard to them ought to be addressed to that Department (278 Goldwin Smith).

The courses dealing with language and linguistics are offered by the Division of Modern Languages, and administered by that Division (106 Morrill Hall).

**101. ELEMENTARY COURSE**

Either term. Credit six hours. Students who have previously studied Spanish should consult page 12 before registering for this course. Fall term: drill M-F 8, 9:05, 12:20, or 1:25; lectures M W 2:30 or T Th 3:35. Spring term: drill M-F 8 or 9:05; lecture W F 12:20.

**102. ELEMENTARY COURSE**

Either term. Credit six hours. Prerequisite, Spanish 101 or its equivalent. Students who have previously studied Spanish should consult page 12 before registering for this course. Fall term: drill M-F 8 or 9:05; lecture W F 12:20. Spring term: drill M-F 9:05, 10:10, or 12:20; lecture M W 3:35 or T Th 10:10.

## 112. ELEMENTARY COURSE

Either term. Credit three hours. Prequalification course for students entering above the level of placement in Spanish 102. Fall term: drill M W F 8, 10:10, 11:15, or 1:25; lecture Th 9:05. Spring term: drill M W F 9:05 or 12:20; lecture F 11:15.

## 201. INTRODUCTION TO SPANISH LITERATURE

Either term. Credit three hours. Prerequisite, Qualification in Spanish (for definition of Qualification see page 12). M W F 11:15 or T Th S 9:05. Mr. Bandera, Mr. Brenes, and Staff.

An intermediate reading course in which Spanish texts of established literary quality are read and analysed. The purpose is twofold: to develop reading and speaking facility through acquisition of vocabulary and idiom, and to develop methods and habits of critical appreciation of a foreign literature. Class discussion is conducted mainly in Spanish. The literature course which normally follows Spanish 201 is Spanish 311 or 312.

## 201A. INTRODUCTION TO SPANISH AMERICAN LITERATURE

Either term. Credit three hours. Prerequisite, Qualification in Spanish (for definition of Qualification see page 12). M W F 2:30. Fall term. Mr. Bernstein; spring term, instructor to be announced.

An intermediate reading course in which Spanish American texts of established literary quality are read and analysed. The purpose is twofold: to develop reading and speaking facility through acquisition of vocabulary and idiom, and to develop methods and habits of critical appreciation of a foreign literature. Class discussion is conducted mainly in Spanish. The literature course which normally follows Spanish 201A is Spanish 311 or 312.

## 203. INTERMEDIATE COMPOSITION AND CONVERSATION

Either term. Credit three hours. Prerequisite, Qualification in Spanish (for definition of Qualification see page 12). Fall term: M-F 9:05, 10:10, 11:15, or 2:30. Spring term: M-F 11:15, 12:20, or 2:30.

Guided conversation, grammar review, and oral and written composition. Emphasis is on increasing the student's oral and written command of Spanish.

## 204. INTERMEDIATE COMPOSITION AND CONVERSATION

Either term. Credit three hours. Prerequisite, Spanish 203. M-F 9:05, 10:10, or 3:35.

The study of advanced grammar. Exercises designed to improve the student's ability to speak, read, and write Spanish.

## 205. THE MODERN SPANISH NOVEL

Fall term. Credit three hours. Mr. Kronik.

For description see Freshman Humanities Program, page 27.

## 206. THE MODERN SPANISH DRAMA

Spring term. Credit three hours. Mr. Kronik.

For description see Freshman Humanities Program, page 27.

## 221-222. ELEMENTARY COURSE

Throughout the year. Credit three hours a term. Prerequisites, satisfaction of the language requirement in a Romance language or Latin, and consent of the instructor. M W F 2:30.

**303. ADVANCED COMPOSITION AND CONVERSATION**

Fall term. Credit four hours. Prerequisite, Spanish 204. M-F 10:10.

The study of fundamental aspects of style in standard spoken Spanish; advanced problems in comparative usage in English and Spanish. Frequent oral and written reports in Spanish are required. Cultural content is oriented to Spain.

**304. ADVANCED COMPOSITION AND CONVERSATION**

Spring term. Credit four hours. Prerequisite, Spanish 303. M-F 10:10.

Extensive reading in current Spanish language publications. The study of fundamental aspects of style in standard written Spanish. Cultural content is oriented to Spanish America.

**311-312. MASTERPIECES OF HISPANIC LITERATURE**

Throughout the year. Credit four hours a term. Prerequisite, Spanish 201, four years entrance Spanish, or consent of the instructor. May be entered in the second term. M W F 12:20. Mr. Bandera. Spring term 312, M W F 12:20, Mr. Bandera; T Th S 10:10. Mr. Brenes.

Reading and discussion of representative works of Spanish and Spanish American literature. Works chosen are read in their entirety. Most of the first semester material is from Golden Age and colonial authors. Second semester deals with the nineteenth and twentieth centuries. Class conducted in Spanish.

**384. THE GENERATION OF 1898**

Spring term. Credit four hours. Prerequisite, one 300 level course or consent of the instructor. M W F 10:10. Mr. Kronik.

A study of representative works (novel, poetry, drama, and essay) by Unamuno, Benavente, Baroja, Valle Inclán, Azorín, Machado. Conducted in Spanish.

**397-398. THE MODERN SPANISH AMERICAN NOVEL**

Throughout the year. Credit four hours a term. Prerequisite, a Spanish 300 literature course or consent of the instructor. May be entered second term. M W F 11:15. Mr. Bernstein.

Reading and class discussion of significant novels. Fall term: emphasis on regionalist and social novels. Spring term: emphasis on the psychological novel.

**[401-402. HISTORY OF THE SPANISH LANGUAGE]**

Not offered in 1967-68.

Throughout the year in alternate years. Credit four hours a term. Prerequisites, Qualification in Spanish, and Linguistics 201. M W F 2:30. Mr. Lozano or Mr. Saltarelli or Mr. Solá.

**403. THE GRAMMATICAL STRUCTURE OF SPANISH**

Fall term. Credit four hours. Prerequisites, Qualification in Spanish and Linguistics 201. M W F 2:30. Mr. Solá.

Descriptive analysis of the morphological and syntactical structure of present-day standard Spanish.

**404. SPANISH FOR TEACHERS**

Spring term. Credit four hours. Prerequisites, Qualification in Spanish, and Linguistics 201. M W F 2:30. Mr. Lozano.

A course in methodology and applied linguistics for prospective teachers

of the Spanish language. A survey of current attitudes, methods, materials, and techniques. The application of descriptive linguistics to the organization of lesson material, illustrated mainly through the contrastive study of Spanish and English phonology. Required for provisional New York State teacher certification.

#### THE COMPARATIVE STUDY OF THE ROMANCE LANGUAGES

(See Linguistics 441-442, 443-444, 445, 446, 449)

#### 419-420. SPECIAL TOPICS IN HISPANIC LITERATURE

Fall and spring term. Credit four hours. Hours to be arranged. Staff.

Intensive study of specific topics in Hispanic literature.

#### 429-430. HONORS WORK IN HISPANIC LITERATURE

Throughout the year. May be entered in the second term. Credit four hours.

Prerequisite, consent of the instructor. Hours to be arranged. Staff.

#### 440. MEDIEVAL LITERATURE

Spring term. Credit four hours. Prerequisite, a Spanish 300 literature course or consent of the instructor. M W F 3:35. Mr. Bandera.

Critical literary analysis of major epic and non-epic works of the Spanish Medieval Period.

#### 455. SIXTEENTH-CENTURY SPANISH POETRY

Fall term. Credit four hours. M W F 1:25. Mr. Selig. Prerequisite, one 300 level course or consent of the instructor.

Intensive analysis of selected poetry by Boscán, Garcilaso, Fray Luis de León, and others.

#### 457-458. CERVANTES

Throughout the year. Credit four hours a term. Prerequisite, a Spanish 300 literature course or consent of the instructor. May be entered the second term. Hours to be arranged. First meeting in room 288 at 4:30 on the first day of instruction. Mr. Brenes.

Fall term: *Don Quijote*, Part I; and the *Novelas*. Spring term: *Don Quijote*, Part II; *Persiles*; and dramatic works. Class conducted in Spanish.

#### 466. SEVENTEENTH-CENTURY SPANISH POETRY

Spring term. Credit four hours. Prerequisite, one 300 level course or consent of the instructor. M W F 1:25. Mr. Selig.

Intensive analysis of selected poetry by Lope de Vega, Quevedo, and Góngora.

#### 489. SPANISH AMERICAN LITERATURE TO 1888

Fall term. Credit four hours. Prerequisite, a Spanish 300 level literature course or consent of the instructor. M W F 12:20. Mr. Bernstein.

Reading and class discussion of significant Spanish American works of prose and poetry from the Colonial Period and the nineteenth century.

#### 587. GRADUATE SEMINAR IN MODERN SPANISH LITERATURE

Fall term. Credit four hours. W 3:35-5:15. Mr. Kronik.

Topic: Galdós as a novelist.

#### 590. GRADUATE SEMINAR IN SPANISH AMERICAN LITERATURE

Spring term. Credit four hours. T 3:35-5:15. Mr. Bernstein.



Topic: Borges and Mallea. Reading of the principal collections of short stories, the major novels of Mallea, and certain non-fiction works of both authors.

#### 600. SEMINAR IN IBERO-ROMANCE LINGUISTICS

Offered in accordance with student needs. Credit four hours. Hours to be arranged. Mr. Agard or Mr. Solá.

#### 629. INTRODUCTION TO LITERARY STUDIES

Fall term. Credit 4 hours. Required of all first-year graduate students in Romance studies. M W 2:30. Mr. Selig.

#### 639-640. SPECIAL TOPICS IN HISPANIC LITERATURE

Throughout the year. Credit four hours a term. For graduate students. Hours to be arranged. Staff.

## Tagalog

Mr. J. U. Wolff and Staff.

#### 101-102. ELEMENTARY COURSE

Throughout the year. Credit six hours a term. Prerequisite, consent of the instructor. Hours to be arranged. Offered according to demand.

#### 403. LINGUISTIC STRUCTURE OF TAGALOG

Either term. Credit four hours. Prerequisite, Linguistics 201 or 301. Hours to be arranged. Mr. Wolff.

## Telugu

Mr. G. B. Kelley and Staff.

#### 101-102. ELEMENTARY COURSE

Throughout the year. Credit six hours a term. Hours to be arranged.

#### 201-202. TELUGU READING

Throughout the year. Credit three hours a term. Prerequisite, Qualification in Telugu. Hours to be arranged.

(See also Linguistics 331, 436, 536.)

## Thai

Mr. R. B. Jones, Jr., and Staff.

#### 101-102. ELEMENTARY COURSE

Throughout the year. Credit six hours a term. Hours to be arranged.

#### 201-202. THAI READING

Throughout the year. Credit three hours a term. Prerequisite for 201, Qualifi-

cation in Thai; for 202, Thai 201 or consent of the instructor. Hours to be arranged. Mr. Jones.

#### 203-204. COMPOSITION AND CONVERSATION

Throughout the year. Credit three hours a term. Prerequisite for 203, Qualification in Thai; for 204, Thai 203 or consent of the instructor. Hours to be arranged. Mr. Jones.

#### 301-302. ADVANCED THAI

Throughout the year. Credit four hours a term. Prerequisite, Thai 201-202 or the equivalent. Hours to be arranged. Mr. Jones.

Selected readings in Thai writings in various fields.

#### 305-306. THAI LITERATURE

Throughout the year. Credit four hours a term. Prerequisite, Thai 301-302 or consent of the instructor. Hours to be arranged. Mr. Jones.

Reading of some of the significant novels, short stories, and letters written since 1850.

## Urdu

Mr. G. H. Fairbanks and Staff.

#### 101-102. ELEMENTARY COURSE

Throughout the year. Credit six hours a term. Drill, daily at 9:05. Lecture, T Th 10:10.

(See also Linguistics 331, 432, 521, 522, 530, 531, 532, 534)

#### 201-202. URDU READING

Throughout the year. Credit three hours a term. Prerequisite, Qualification in Urdu. Hours to be arranged.

## Vietnamese

Mr. R. B. Jones, Jr., and Staff.

#### 101-102. ELEMENTARY COURSE

Throughout the year. Credit six hours a term. Hours to be arranged.

#### 201-202. VIETNAMESE READING

Throughout the year. Credit three hours a term. Prerequisite for 201, Qualification in Vietnamese; for 202, Vietnamese 201 or consent of the instructor. Hours to be arranged. Mr. Jones.

#### 203-204. COMPOSITION AND CONVERSATION

Throughout the year. Credit three hours a term. Prerequisite for 203, Qualification in Vietnamese; for 204, Vietnamese 203 or consent of the instructor. Hours to be arranged. Mr. Jones.

#### 301-302. ADVANCED VIETNAMESE

Throughout the year. Credit four hours a term. Prerequisite, Vietnamese 201-202 or consent of the instructor. Hours to be arranged. Mr. Jones.

## 305-306. VIETNAMESE LITERATURE

Throughout the year. Credit four hours a term. Prerequisite, Vietnamese 301-302 or consent of the instructor. Hours to be arranged. Mr. Jones.

Reading of selections from contemporary literature.

## MUSIC

Mr. J. T. H. Hsu, Chairman; Messrs. W. W. Austin, G. C. Green, D. J. Grout, W. C. Holmes, K. Husa, J. Kirkpatrick, W. F. Meyer, D. Montagu, R. M. Palmer, D. R. M. Paterson, H. E. Samuel, T. A. Sokol, M. W. Stith, Miss Barbara Troxell.

Freshmen considering music as a possible major or minor field should register for Music 151-152, and should consult the chairman of the Department of Music as early as possible, to make tentative plans for a comprehensive program in accordance with their abilities and previous musical training. The sophomore year is not too late for a decision, provided that during that year the student is enrolled in the appropriate courses. The Distribution requirements should be completed by the end of the sophomore year.

Prerequisites for admission to the major are: Music 151-152, with a grade above C in each part of the final examination (including sight singing and keyboard playing); Music 282; Music 321-322; and participation in one of the musical organizations or ensembles (Music 331 through 338 and 441 through 444).

Required courses for the A. B. degree with a major in music are: Music 351-352; 381-382; 451 or 453; 481; a second year of individual instruction in performance and of participation in a musical organization or ensemble; a course in conducting (Music 461 or 463); and one of the following: 457, 458, or 482.

Candidates for Honors in music will be designated by the Department at the beginning of the second semester of their junior year. Honors candidates will take Music 401-402 in addition to the courses regularly required for a major. Each candidate will submit an Honors thesis or a composition not later than April 1 of his senior year and will be required to pass a general examination in the theory and history of music not later than May 1 of his senior year.

The Distribution requirement in the expressive arts is satisfied in music by Music 151-152, 213-212, 215-216, 213-321-322, 213 plus any three hours in courses 331 through 338, or by six hours in any other courses for which a student is qualified and has the approval of the Department.

A large collection of recorded music and scores is housed in the Department of Music, where a number of phonograph listening rooms are available. These facilities may be used by any member of the student body at hours to be announced each term.

Choral and instrumental ensembles are trained and directed by members of the departmental staff each term, and all students who are interested are invited to join one or more of these groups. These ensem-

bles include the Sage Chapel Choir, the Cornell Chorus, the Cornell University Glee Club, the Bands (Marching Band, Wind Ensemble, Symphonic Band, Brass Ensembles), the Cornell Symphony Orchestra, the Cornell Chamber Orchestra, and Chamber Music groups. For rehearsal hours and conditions for academic credit, see Music 331 through 338 and 441 through 444. Announcements of tryouts for all organizations will be made at the beginning of the fall term.

## Music Theory

### 151-152. THEORY I

Throughout the year. Credit three hours a term. A knowledge of the rudiments of music and some ability to perform are required for admission. Enrollment in the course is provisional pending the demonstration of adequate background and ability in proficiency tests given at the beginning of the term. First term prerequisite to second. M T W Th F 9:05. Mr. Paterson.

Designed for students expecting to major in music and other qualified students. An integrated theory course, prerequisite for all advanced courses in music. Detailed study of the fundamental elements of music: rhythm, scales, intervals, triads; melodic movement, harmonic progression, and introduction to analysis and elementary composition. Drill in aural discrimination, sight singing, and keyboard harmony; rhythmic, melodic, and harmonic dictation; and score reading.

### 215-216. BASIC TECHNIQUES OF MUSIC

Throughout the year. Credit three hours a term. Ability to sing on pitch is required for admission; some ability to play an instrument is desirable. First term prerequisite to second. M T W Th F 9:05. This course may not be counted toward the requirements for the major in music. Mr. Green.

Study of the fundamental techniques of music. Includes rhythmic, melodic, and harmonic dictation; sight singing; writing of melody and simple four-part harmony; keyboard harmony; and listening to recorded masterpieces. Second term includes introduction to analysis and simple contrapuntal writing for voices and instruments.

### 351-352. THEORY II

Throughout the year. Credit four hours a term. Prerequisite, Music 152 or equivalent. First term prerequisite to second. M W F 10:10 and T Th 2:30. Mr. Green.

Includes advanced harmony and intermediate counterpoint and analysis. A continuation of Music 151-152, with more advanced drill in the areas specified in the description of that course. Special emphasis on the study of chromatic harmony and contrapuntal writing in two and three voices. There will be analysis of melody and harmony and of some of the fundamental homophonic and contrapuntal forms.

### [451. ADVANCED COUNTERPOINT AND ANALYSIS: EIGHTEENTH CENTURY]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, Music 352 or equivalent. Mr. Palmer.

**453. ADVANCED COUNTERPOINT AND ANALYSIS: SIXTEENTH CENTURY**

Fall term. Credit four hours. Prerequisite, Music 352 or equivalent. M W 12:20 and Th 2:30. Mr. Palmer.

Contrapuntal techniques of the sixteenth century, including the analysis of works by Palestrina and his contemporaries.

**[455. ORCHESTRATION]**

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, Music 352. Mr. Husa.

**457-458. COMPOSITION (PROSEMINAR)**

Credit four hours a term. May be entered either term. Prerequisite, Music 352 or equivalent. Hours to be arranged. Mr. Husa.

Problems of writing in the smaller forms and in various media. Class discussion and performance, with analysis of contemporary works. The basic techniques of composition and their extensions in the twentieth century will be related to individual abilities and needs. Students will be required to attend the Friday afternoon reading sessions of student compositions and occasionally to attend rehearsals of the Cornell musical organizations and ensembles.

**[461. ORCHESTRAL CONDUCTING]**

Not offered in 1967-68.

Fall term. Credit two hours. Prerequisite, Music 352. Mr. Husa.

**[463. CHORAL CONDUCTING]**

Not offered in 1967-68.

Fall term. Credit two hours. Prerequisite, Music 352. Mr. Sokol.

**[464. CHORAL STYLE]**

Not offered in 1967-68.

Spring term. Credit two hours. Prerequisite, Music 352. Mr. Sokol.

## Music History

**212. BEETHOVEN**

Spring term. Credit three hours. Open to sophomores, juniors, and seniors. M W (F) 12:20 and conferences to be arranged. Mr. Austin and other members of the Department.

Especially for students just beginning to take an interest in concert music. The symphonies are studied chiefly through phonograph records. Selected piano sonatas and other works are presented in live performance.

**213. THE ART OF MUSIC**

Fall term. Credit three hours. Open to sophomores, juniors, and seniors. T Th 11:15 and one discussion section to be arranged. Mr. Austin and Assistants.

A survey of old and new, easy and difficult music, designed to speed up the continuing development of various independent tastes. Frequent short written reports based on listening, beating time, and singing.

**282. INTRODUCTION TO MUSICAL STYLE AND ANALYSIS**

Spring term. Credit three hours. Prerequisite, Music 152 or equivalent. M W F 11:15. Mr. Austin.

A study of the interplay of idiom and structure in various styles through analysis of typical masterpieces.

### 313. MASTERPIECES OF MUSIC

Fall term. Credit four hours. Prerequisite, consent of the instructor. M 7:30-10:30. Mr. Grout.

Study of selected works and their historical environment. In 1967 the subject will be the symphony since Beethoven.

### 314. THE GREAT TRADITION IN MUSIC

Spring term. Credit four hours. Prerequisite, consent of the instructor. M 7:30-10:30. Mr. Grout.

Intensive study of a single work or group of works as representative of a given tradition and style. In 1968 the subject will be Bach's *Passion According to St. Matthew*.

### 381-382. HISTORY OF MUSIC I

Throughout the year. Credit four hours a term. Prerequisite, Music 282. First term prerequisite to second. M 1:25-3:20, W 1:25. Mr. Holmes.

History of musical styles from the Middle Ages to Beethoven. Intensive study of musical scores, readings from theoretical sources (in translation), and written reports.

### 481. HISTORY OF MUSIC II

Fall term. Credit four hours. Prerequisite, Music 382. M 1:25-3:20 and individual conferences. Mr. Grout.

History of musical styles from the time of Beethoven to the present.

### 482. MUSICOLOGY (PROSEMINAR)

Spring term. Credit four hours. Prerequisite, Music 481. M 1:25-3:20. Mr. Grout.

Principles of research. Introduction to notation, with exercises in transcription from sources and preparation of performing editions.

## Honors

### 401-402. HONORS WORK IN MUSIC

Credit four hours a term. Open only to Honors candidates in their senior year. Mr. Austin and other members of the Department.

## Musical Performance

### 321-322. INDIVIDUAL INSTRUCTION IN VOICE, ORGAN, PIANO; STRING, WOODWIND, AND BRASS INSTRUMENTS

Throughout the year. For credit (undergraduate only), see below. Consent of the instructor required.

Basic fee for one half-hour lesson weekly during one term (carrying no credit), \$60. Fees for a practice schedule of six hours weekly during one term: \$20 for the use of a pipe organ; \$10 for a practice room with piano; \$5 for a practice room without piano.

For credit: one hour lesson weekly (or two half-hours) and a double practice schedule carry three hours of credit for two terms, provided that the student has earned or is earning at least an equal amount of credit in

courses in music history or music theory. (Students should register in Music 321-322 for one hour's credit the first term and two hours' credit the second term.) The basic fees involved are then multiplied by one and one half (lesson fee \$90; practice fee \$30, \$15, and \$7.50). A student may register for this course in successive years.

The Department of Music offers a limited number of scholarships in applied music. For information inquire at the Department office.

## Musical Organizations and Ensembles

Throughout the year. Credit one hour a term. Consent of instructor required; admission by audition only. Registration is permitted in two of these courses simultaneously, and students may register in successive years, but no student may earn more than six hours of credit in these courses. Membership in these and other musical organizations is also open to students without credit, if desired.

### 331-332. SAGE CHAPEL CHOIR

T 4:30-5:30, Th 7:30-9:00, Sunday 9:30 a.m. Messrs. Paterson and Sokol.

### 335-336. CORNELL ORCHESTRAS

Rehearsals for the Cornell Symphony Orchestra: W 7:30-10 p.m., full orchestra; alternate T or Th 7:30-10 p.m., sectional rehearsals. Rehearsals for the Cornell Chamber Orchestra; M 7:30-10 p.m. (Limited to more experienced players.) Mr. Husa.

### 337-338. UNIVERSITY BANDS

Marching Band: T 7-9 p.m., Th 7-9 p.m., and F 4:30-5:45 (during football season only). Wind Ensemble: T 7-9 p.m., Th 4:30-5:45 (after football season). Symphonic Band: M 4:30-5:45, W 7-9 p.m. Mr. Stith.

### 339-340. EAR TRAINING AND SIGHT SINGING

Throughout the year. Open only to students who are participating in a University musical ensemble. Consent of the instructor is required. T 3:35. Messrs. Sokol and Paterson.

A practical course designed to improve the student's conception of melody and rhythm and his sight reading ability. Progressive class exercises in intervals, rhythms, melodies, and counterpoints.

### 441-442. CHAMBER MUSIC ENSEMBLE

Hours to be arranged. Consent of the instructor is required. Messrs. Montagu and Hsu.

### 443-444. CHAMBER SINGERS

F 4:30-6. Consent of the instructor is required. Mr. Sokol.

Study and performance of selected vocal music. Occasionally viols, recorders, and other instruments may be employed.

## Courses Primarily for Graduates

### [555. ANALYSIS]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, Music 352 or equivalent. Required of all graduate students in composition. Mr. Palmer.

557-558. SEMINAR IN COMPOSITION

Throughout the year. Credit four hours a term. Open to seniors by permission. W 1:25-3:20. Mr. Palmer.

Intended to make the student acquainted with compositional practices in contemporary styles and to develop his creative abilities.

[580. INTRODUCTION TO CONTEMPORARY MUSIC]

Not offered in 1967-68.

Spring term. Credit two hours. Prerequisite, Music 352 or equivalent. Mr. Palmer.

581-582. INTRODUCTION TO BIBLIOGRAPHY AND RESEARCH

Throughout the year. Credit four hours a term. Prerequisites, a reading knowledge of French and German and an elementary knowledge of music theory and general music history. Open to seniors by permission. M 1:25-3:20. Mr. Samuel.

For description see the *Announcement of the Graduate School*.

585-586. DEBUSSY TO BOULEZ

Throughout the year. Credit four hours a term. Prerequisites, Music 580 and 582 or equivalent. Th 1:25-3:20. Mr. Austin.

For description see the *Announcement of the Graduate School*.

[680. CONTEMPORARY MUSIC (SEMINAR)]

Not offered in 1967-68.

Spring term. Credit two hours. Prerequisite, Music 580. Mr. Palmer.

681-682. MUSICOLOGY (SEMINAR)

Throughout the year. Credit four hours a term. T 1:25-3:20. Mr. Grout.

683-684. PALEOGRAPHY

Throughout the year. Credit four hours a term. Prerequisite, reading knowledge of French and German. Reading knowledge of Latin is desirable. Th 1:25-3:20. Mr. Holmes.

For description see the *Announcement of the Graduate School*.

685-686. HISTORY OF OPERA (SEMINAR)

Throughout the year. Credit four hours a term. M 9:05-11. Mr. Grout.

Specialized independent studies.

## PHILOSOPHY

Mr. N. Malcolm, Chairman; Messrs. M. Black, S. M. Brown, Jr., J. V. Canfield, K. S. Donnellan, A. Fine, B. C. Goldberg, N. Kretzmann, D. B. Lyons, N. C. Pike, D. Sachs, S. S. Shoemaker, R. R. K. Sorabji, M. A. G. Stocker, N. L. Sturgeon, and G. H. von Wright.\*

Students expecting to major in philosophy must begin their systematic study of it in their freshman or sophomore years. For admission to the major, the normal requirement is earning a grade of C or better in a

\*Distinguished nonresident member of the University Faculty, visiting the campus for short periods at irregular intervals.



philosophy course above 200. Application for admission is made to the Department of Philosophy.

For the major, eight philosophy courses are required, and these must include either (a) 24 hours of courses numbered above 300, or (b) Philosophy 210 and 20 hours of courses numbered above 300. Each student majoring in philosophy must complete the following (1) Philosophy 201 and at least one course in the history of philosophy from among 301, 302, 303, 305, and 307; at least two courses numbered above 400; and (3) at least eight hours of approved courses in related subjects.

For provisional acceptance as a candidate for Honors, a student must have chosen a philosophy major, have a cumulative average of B— for all work in the College of Arts and Sciences and have an average of B for courses in philosophy. All candidates for Honors must take the Honors seminar (Philosophy 601) at least once in their junior or senior years. In their senior year, they pursue a program of research (taking Philosophy 490) in either the fall or the spring term leading to the writing of an Honors essay. All candidates for Honors must also take two additional courses numbered above 400.

The Distribution requirement in the humanities is satisfied in philosophy by completing any of the following sequences: 100 or 101 plus any 200 or 300 course, excluding 212; any two courses at the 200 or 300 level, excluding 212.

The 300-level courses are normally open only to undergraduates and to graduate students in other fields. Graduate students in philosophy may be permitted to enroll in 300-level courses by special action of the Department. 400-level courses will be open to graduate students and juniors and seniors.

#### 100. FRESHMAN SEMINAR IN PHILOSOPHY

Either term. Credit three hours. Open only to freshmen who have not taken Philosophy 101. Fall term: Messrs. Canfield, Kretzmann, Pike, and Sachs. Spring term: Messrs. Lyons, Sorabji, and Stocker.

Offered as part of the Freshman Humanities Program. See page 22.

#### 101. INTRODUCTION TO PHILOSOPHY

Either term. Credit three hours. Open only to freshmen and sophomores who have not taken Philosophy 100. Registration is limited to 30 students a section. Fall term: M W F 11:15, Mr. Sorabji; M W F 12:20, Mr. Stocker; T Th S 9:05, Mr. Sturgeon; T Th S 10:10, Mr. Goldberg. Spring term: M W F 9:05, Mr. Fine; M W F 12:20, Mr. Canfield; T Th S 11:15, Mr. Sturgeon; T Th S 12:20, Mr. Goldberg.

An introduction to philosophical ideas and problems through an intensive study of the writings of several major philosophers.

#### 201. ANCIENT AND MEDIEVAL PHILOSOPHY

Fall term. Credit four hours. Open to sophomores, juniors, and seniors. Required for students majoring in philosophy. M W F 9:05. Discussion sections to be arranged. Mr. Sorabji.

Occidental philosophical thought from its Greek origins to the end of the medieval period. A study of the most important figures, works, and systems in their cultural context.

## 210. PHILOSOPHICAL PROBLEMS

Either term. Credit four hours. Open to sophomores, juniors, and seniors, and to freshmen who have taken 100 or 101. Recommended for prospective majors in philosophy. Registration is limited to 35 students. Fall term: T Th S 11:15. Mr. Sturgeon. Spring term: M W F 2:30. Mr. Malcolm. Discussion sections to be arranged.

The study of a selected philosophical problem. Contemporary as well as classical sources. Topic for fall term: Thought, will, and action. Topic for spring term: Perceiving, sensing, and knowing.

## 212. INTRODUCTION TO LOGIC

Either term. Credit four hours. No prerequisite. Fall term: M W F 10:10, Mr. Canfield. Spring term: M W F 10:10, Mr. Kretzmann. Discussion sections to be arranged.

A presentation of the elements and fundamental techniques of formal logic. Emphasizes the analysis and evaluation of arguments, provides some familiarity with deductive systems, and includes discussion of logical concepts particularly relevant to philosophy.

## 215. SEMANTICS

Fall term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 12:20. Discussion sections to be arranged. Mr. Black.

A survey of the philosophy of language and symbolism. Topics include the nature and limits of language, theories of meaning, artificial languages, conceptual schemes, types of discourse, and philosophical implications of contemporary linguistics.

## 223. SOCIAL AND POLITICAL PHILOSOPHY

Spring term. Credit four hours. Open to sophomores, juniors, and seniors and to freshmen who have taken 100 or 101. M W F 11:15. Discussion sections to be arranged. Mr. Stocker.

Topic for 1967-68: The nature and problems of civil disobedience.

## 225. ETHICS

Fall term. Credit four hours. Open to sophomores, juniors, and seniors. T Th S 9:05. Discussion sections to be arranged. Mr. Lyons.

An introduction to problems in moral philosophy, such as egoism, relativism, subjectivism, and the relations between values and facts; and to types of ethical theory, such as utilitarianism and intuitionism.

## [301. MODERN PHILOSOPHY I]

Not offered in 1967-68.

## 302. MODERN PHILOSOPHY II

Spring term. Credit four hours. Open to students who have taken one course in philosophy. T Th S 12:20. Discussion sections to be arranged. Mr. Pike.

A study of the philosophies of the major British empiricists, in particular Locke, Berkeley, and Hume.

## 303. MEDIEVAL PHILOSOPHY

Spring term. Credit four hours. Prerequisite, two courses in philosophy or consent of the instructor. M W F 12:20. Discussion sections to be arranged. Mr. Kretzmann.

An investigation of such topics as universals, truth, faith, and reason, the

existence and nature of God, in the writings of Augustine, Boethius, Anselm, Abelard, Aquinas, and others.

[304. ANCIENT PHILOSOPHY AND SCIENCE]

Not offered in 1967-68.

[305. SPECIAL TOPICS IN THE HISTORY OF PHILOSOPHY]

Not offered in 1967-68.

307. KANT

Spring term. Credit four hours. Prerequisite, two courses in philosophy or consent of the instructor. T Th S 10:10. Discussion sections to be arranged. Mr. Goldberg.

An examination of the *Critique of Pure Reason*. Among the topics to be discussed are Kant's theory of space and time, his drawing of the analytic-synthetic distinction, and his attempted proof that there are synthetic *a priori* propositions.

[308. CONTEMPORARY PHILOSOPHY]

Not offered in 1967-68.

[309. AMERICAN PHILOSOPHY]

Not offered in 1967-68.

[314. INTRODUCTION TO PHILOSOPHY OF MATHEMATICS]

Not offered in 1967-68.

[316. METAPHYSICS AND EPISTEMOLOGY]

Not offered in 1967-68.

[320. PHILOSOPHY IN LITERATURE]

Not offered in 1967-68.

321. AESTHETICS

Spring term. Credit four hours. Open to students who have had one course in philosophy, or who are majors in English, literature, or history of art, and to others by consent of the instructor. M W F 2:30. Discussion sections to be arranged. Mr. Sachs.

A selection from the following topics: aesthetic judgments and critical reasoning, taste, artistic expression of feelings and emotions, representation and form.

322. PHILOSOPHY OF RELIGION

Fall term. Credit four hours. Open to sophomores, juniors, and seniors. T Th S 12:20. Discussion sections to be arranged. Mr. Pike.

A philosophical examination of some major theological issues: religious experience, religious language, arguments for the existence of God, miracles, faith.

323. LAW, SOCIETY, AND MORALITY

Fall term. Credit four hours. Open to sophomores, juniors, and seniors. T Th S 11:15. Discussion sections to be arranged. Mr. Lyons.

An examination of connected problems in moral, legal, and political philosophy, with emphasis on the relations between law and morals.

## 218 PHILOSOPHY

### 325. ETHICAL THEORY

Spring term. Credit four hours. Open to sophomores, juniors, and seniors who have had one course in philosophy, to others by consent of the instructor. T Th S 9:05. Discussion sections to be arranged. Mr. Sturgeon.

A systematic study of one or more ethical theories. Topic for 1967-68: Hume and Kant.

### 327. INTRODUCTION TO PHILOSOPHY OF SCIENCE

Fall term. Credit four hours. Open to juniors and seniors. M W F 11:15. Discussion sections to be arranged. Mr. Fine.

Critical analysis of scientific methods with special reference to the natural sciences; detailed study of such topics as causality, theory making, concept formation, and measurement.

### 333. PHILOSOPHY OF PSYCHOLOGY

Fall term. Credit four hours. Open to sophomores, juniors, and seniors who have had one course in philosophy, to others by consent of the instructor. M W F 10:10. Discussion sections to be arranged. Mr. Malcolm.

Topics will include the relationship between mental states and bodily states and behavior, the nature of unconscious mental states, and the central ideas of Freudian psychology.

### 403. PLATO AND ARISTOTLE

Spring term. Credit four hours. Open to philosophy majors and graduate students, and others by consent of the instructor. T Th S 11:15. Discussion sections to be arranged. Mr. Sorabji.

Topic for 1967-68: Aristotle as scientist and philosopher.

### 412. DEDUCTIVE LOGIC

Fall term. Credit four hours. Open to philosophy majors and graduate students, and others by consent of the instructor. M W F 2:30. Discussion sections to be arranged. Mr. Fine.

A survey of current methods of formal logic with emphasis on their philosophical implications and applications. Topics include quantification theory, theory of descriptions, properties of formal systems, set theory, logical paradoxes.

#### [413. DEDUCTIVE LOGIC]

Not offered in 1967-68.

#### [414. PHILOSOPHY OF LOGIC]

Not offered in 1967-68.

#### [415. PROBLEMS IN PHILOSOPHY OF LANGUAGE]

Not offered in 1967-68.

#### [416. METAPHYSICS]

Not offered in 1967-68.

### 417. THEORY OF KNOWLEDGE

Spring term. Credit four hours. Open to graduate students and seniors majoring in philosophy; others by consent of the instructor. M W F 11:15. Discussion sections to be arranged. Mr. Malcolm.

Topic for 1967-68: Memory and historical knowledge.

## 425. CONTEMPORARY ETHICAL THEORY

Fall term. Credit four hours. Open to philosophy majors and graduate students, and to others by consent of the instructor. M W F 11:15. Discussion sections to be arranged. Mr. Stocker.

Topic for 1967-68: Value and obligation.

## 427. PROBLEMS IN PHILOSOPHY OF SCIENCE

Spring term. Credit four hours. Open to philosophy majors and graduate students, and to others by consent of the instructor. M W F 10:10. Discussion sections to be arranged. Mr. Canfield.

Topic for 1967-68: The concept of the self in recent psychological and social theory.

## 433. PROBLEMS IN ETHICS AND PHILOSOPHY OF MIND

Spring term. Credit four hours. Open to juniors, seniors, and graduate students. Prerequisite, two courses in philosophy or consent of the instructor. M W F 12:20. Discussion sections to be arranged. Mr. Sachs.

Selected topics in moral and mental philosophy: moral feelings and attitudes, ethical subjectivism and ethical relativism, thought and action, intentions, oneself and one's future. Topic for 1967-68: Moral feelings.

## 490. SPECIAL STUDIES IN PHILOSOPHY

Either term. Credit four hours. Open only to Honors students in their senior years. Members of the Department.

## Seminars

## 551. PHILOSOPHY OF RELIGION

Spring term. Credit four hours. Th 3:35-5:30. Mr. Pike.

Topic for 1967-68: The attributes of God.

## 576. ANCIENT PHILOSOPHY

Fall term. Credit four hours. T 3:35-5:30. Mr. Sachs.

Topic for 1967-68: the *Theaetetus* and related dialogues.

## 580. MEDIEVAL PHILOSOPHY

Fall term. Credit four hours. W 3:35-5:30. Mr. Kretzmann.

Topic for 1967-68: Ockham's logic and metaphysics.

## 585. ETHICS AND VALUE THEORY

Spring term. Credit four hours. W 3:35-5:30. Mr. Lyons.

Topic for 1967-68: Rights.

## [587. AESTHETICS]

Not offered in 1967-68.

## 588. METAPHYSICS

Fall term. Credit four hours. F 3:35-5:30. Mr. Goldberg.

Topic for 1967-68: Materialism.

## [589. METAPHYSICS]

Not offered in 1967-68.

[590. PHILOSOPHY OF LANGUAGE]

Not offered in 1967-68.

594. THEORY OF KNOWLEDGE

Fall term. Credit four hours. Th 3:35-5:30. Mr. Malcolm.

Topic for 1967-68: Wittgenstein's *Zettel*.

595. SEMANTICS AND LOGIC

Spring term. Credit four hours. T 3:35-5:30. Mr. Black.

Topic for 1967-68: The Philosophy of Linguistics.

597. PHILOSOPHY OF SCIENCE

Spring term. Credit four hours. M 3:35-5:30. Mr. Fine.

Topic for 1967-68: To be announced.

[601. HONORS SEMINAR]

Not offered in 1967-68.

## PHYSICS

Mr. L. G. Parratt, Chairman; Messrs. V. Ambegaokar, W. W. Ash, N. W. Ashcroft, L. L. Barnes, B. W. Batterman, K. Berkelman, H. A. Bethe, R. Bowers, B. H. Brandow, A. A. Browman, S. G. Brown, P. A. Carruthers, D. G. Cassel, G. V. Chester, D. D. Clark, D. R. Corson, R. M. Cotts, T. R. Cuykendall, J. P. Delvaille, J. W. DeWire, D. A. Edwards, P. A. Egelstaff, D. B. Fitchen, K. Gottfried, K. I. Greisen, D. E. Groom, F. L. Gross, L. N. Hand, P. L. Hartman, D. F. Holcomb, J. M. Irvine, T. Kinoshita, J. A. Krumhansl, D. M. Lee, R. M. Littauer, E. C. Loh, H. Mahr, B. W. Maxfield, B. D. McDaniel, N. D. Mermin, N. B. Mistry, V. Narayanamurti, M. S. Nelkin, H. F. Newhall, J. Orear, R. O. Pohl, A. L. Read, J. D. Reppy, T. N. Rhodin, E. E. Salpeter, M. F. Sharefkin, B. M. Siegel, A. J. Sievers, J. Silcox, R. H. Silsbee, A. Silverman, R. L. Sproull, P. C. Stein, R. M. Talman, D. H. White, J. W. Wilkins, K. G. Wilson, R. R. Wilson, W. M. Woodward, and D. R. Yennie.

Entering freshmen may receive advanced placement and credit for one or two terms of Physics 101-102, 121-122, or 207-208 by demonstrating a high level of physics proficiency in the advanced placement examination administered (a) in the spring by the College Entrance Examination Board, or (b) just before the start of classes in the fall by the Cornell Department of Physics. Note that an entering freshman may proceed directly into sophomore physics only if he has also advanced placement in sophomore calculus. Students who receive advanced placement in Physics 122 or 208 or Mathematics 112 (or 213) may advisedly take Physics 122 or 208 or Mathematics 112 (or 213) in the Cornell Summer Session in order to be in regular phase in the physics course sequence.

A student will ordinarily be admitted to a physics-major program, either Option A or B, if he has passed at a good level of proficiency

one year of college physics (Physics 207-208 is strongly recommended) and one year of calculus. If the College language requirement and/or the Distribution requirements will not be completed in the freshman and sophomore years, the candidate must present a plan acceptable to his prospective major adviser for completing these requirements together with those for the major.

**TWO MAJOR OPTIONS.** Option A is intended primarily for students who plan to pursue graduate studies in a physical or biological science, or otherwise to become professional scientists; Option B is intended primarily for students who have broader interests (less physics specialization at the Bachelor-degree level), e.g., for those who plan to pursue graduate studies in a non-science field, to enter the medical profession, or to teach in precollege programs. The choice of Option B, however, does not preclude a professional career in physics or other natural science if the student elects more than the minimal work required for this option, or if he accepts a prolongation of his period of graduate study.

*Option A.* Minimal requirements: (a) thirty credit hours of physics courses selected from those indicated by the symbol # in the list below, including (i) two of Physics 310, 360 and 410, (ii) Physics 443, and (iii) either Physics 444 or 454, with twenty of these thirty hours at a grade of C or higher; and (b) Mathematics 421 (or 331 and 316); or the equivalent as judged by the student's major adviser. Graduate physics courses (numbered above 499) will not be accepted as substitutes in meeting requirement (a). It is strongly recommended that all students interested in a possible Option A major (who do not have advanced placement) take Physics 207-208H and Mathematics 111-122 in the freshman year, and Physics 305 and either 310 or 360, and Mathematics 221-222, in the sophomore year. It is difficult to complete Option A if physics is started in the sophomore year, and possible only if the student has completed freshman calculus before the start of the sophomore year.

*Option B.* Minimal requirements: (a) an intermediate course (numbered above 300) in mechanics, optics, electricity, experimental physics, and in modern physics; (b) three credit hours in mathematics beyond Mathematics 213, 221, or 293; and (c) fifteen credit hours in approved courses in the natural sciences with at least six of these fifteen hours in courses numbered above 300. Requirement (c) may be satisfied in part by approved additional physics courses numbered between 300 and 500; and up to eight of the fifteen hours may be in history of science or philosophy of science. In Option B the physics courses (Physics 207-208) may be conveniently started in the sophomore year.

Students who have an interest in eventual graduate work in any science are advised to meet the foreign language requirement (at least Qualification) in a foreign language different from the one offered for admission to the College; and at least one of these two languages should be French, German, or Russian.

A student may be granted Honors in physics upon the recommendation of the Physics-Advisers Committee of the physics faculty. Any

student interested in Honors should consult with his major adviser before registering for the work of his senior year.

**DISTRIBUTION REQUIREMENT.** The Distribution requirement in physical sciences is satisfied in physics by Physics 101–102, 201–202, or 207–208 preferably followed by 209. Physics 201–202 is recommended for students who do not intend to take any second-year (or higher) course in any natural science.

#### 101–102. GENERAL PHYSICS

Throughout the year. Credit four hours a term. Prerequisite, three years of college preparatory mathematics or permission of the instructor. Course 101 (or 207) is prerequisite to 102. Similar to but less analytically demanding than Course 207–208–209. Intended for students who do not have calculus but who plan to take a second (or higher) year of any natural science, but note that most students who may plan to *major* in a natural science who have had or are coregistered in calculus should elect Physics 207–208–209 instead of this course (see also Physics 201–202). Demonstration lectures, M W 9:05 or 11:15. Two discussion hours per week and one two-hour laboratory alternate weeks, as assigned. Preliminary examinations will be held at 7:30 p.m. Oct. 11, Nov. 15, Mar. 6, and April 17. Messrs. Greisen, Hand, Brown, Delvaille, Irvine, Mermin, Seivers, and Staff.

Basic principles and their relation to other physical sciences. Topics include motion, dynamics, conservation laws, kinetic theory, gravitational and electromagnetic forces and fields, wave motion and light, relativity, atomic physics, structure of matter, and nuclear physics. Historical and philosophical allusions as time permits.

#### 121–122. INTRODUCTORY ANALYTICAL PHYSICS I AND II

Throughout the year. Credit three hours a term. (Physics 121 is also offered in the spring term, T Th S 9:05, for those students who have completed but failed the course in the preceding fall term; permission of the instructor is required.) Prerequisite, calculus or coregistration in Mathematics 191–192, or consent of the instructor. Course 121 is prerequisite to 122. Primarily for students of engineering. Lecture, F 9:05 or 11:15 or 1:25. Two discussion periods per week and one two-hour laboratory period every other week, as assigned. Preliminary examinations will be held at 7:30 p.m. on Oct. 3, Nov. 7, Dec. 5, Feb. 27, Apr. 2, and Apr. 30. Messrs. Newhall, Ashcroft, Chester, Groom, Krumhansl, McDaniel, and Staff.

The mechanics of particles: kinematics, dynamics, conservation of energy, conservation of linear momentum, circular motion, special relativity. Rotation of rigid bodies. Harmonic motion. The properties of the fundamental forces: gravitational, electromagnetic, and nuclear. Kinetic-molecular theory of gases and introductory thermodynamics. At the level of *Introductory Analytical Physics*, fourth edition, by Newhall.

#### [200. PHYSICS FOR STUDENTS OF BIOLOGY]

Not offered in 1967–68.

Fall term. Credit three hours. Prerequisites, Physics 102 or 208, six credit hours in college chemistry, and six in biological science. Students offering Physics 101–102 with an average grade below C must obtain permission of the instructor. Lectures, T Th 12:20. Individual conferences to be arranged. Mr. Barnes.

Selected topics related to the study of biology are chosen from properties of matter, electricity, electromagnetic and particle radiation, and nuclear physics. One term paper required.



## 201-202. ASPECTS OF THE PHYSICAL WORLD

Throughout the year. Credit three hours a term. (Not suitable for credit if taken after any two-term college physics course.) Prerequisites, three years of college-preparatory mathematics and high-school physics or chemistry, or consent of the instructor. Course 201 is prerequisite to 202. Not open to freshmen. Students who plan to take any second-year (or higher) natural science course should elect Physics 101-102 or 207-208-209 instead of this course. Lectures, M W F 2:30. One two-hour laboratory-discussion period per week, as assigned. (Total class time will average about 4 hours per week.) Messrs. Holcomb, R. Wilson, White, Yennie, and Staff.

The central aim is to give non-science majors some insight into the methods and the results of physics and its neighboring sciences. A set of widely ranging but related topics will be considered, without attempt to cover much of the subject systematically at any level. A diversity of treatment is employed. Typical topics: the nature of space and time; relativity; the solar system and gravitation; atoms and the structure of matter; energy — its meaning, measures, and use; and molecules and crystals.

## 207-208. FUNDAMENTALS OF PHYSICS

Throughout the year. Credit four hours a term. Prerequisite, at least co-registration in Mathematics 111-112 or 191-192, or consent of the instructor. High school physics is a normal background and, especially, good facility is presumed in mathematics and analytical thinking. Course 207 (or either 101 or 121 with special permission) is prerequisite to 208. Intended as the first college-physics course for most students majoring in a natural science or in mathematics. Physics 209 is intended to complete the introductory treatment for most students. Demonstration lectures, W F 9:05 or 11:15. Two discussion periods a week and one two and one-half hour laboratory period alternate weeks, as assigned. Preliminary examinations will be held at 7:30 p.m. on Oct. 16, Nov. 20, Mar. 18, and Apr. 22. Messrs. Cassel, Gross, Ambegaokar, Maxfield, Read, Sharefkin, Stein, and Staff.

Emphasis is placed on the fundamental concepts in each of the several branches of physics and on the analytical techniques of problem and laboratory work. At the level of *Physics for Students of Science and Engineering*, 1966, by Halliday and Resnick.

## 208H. FUNDAMENTALS OF PHYSICS

Spring term. An Honors section of 208. Prerequisite, invitation from the instructor. Students should preregister for 208. Mr. Greisen and Staff.

## 209. RECENT DEVELOPMENTS IN PHYSICS

Fall term. Credit three hours. Prerequisites, Physics 208 (or 102 with special permission) and Mathematics 112, or consent of the instructor. Intended to complete the introductory treatment of physics for most students; prospective physics majors who have had 208 or 208H are advised to proceed directly to Physics 303 or 305. Lectures, discussions, and problems. M W F 12:20. Mr. Brandow.

A continuation of Physics 207-208 with further emphasis on twentieth-century concepts in physics. At the level of *Physics of the Atom* by Wehr and Richards.

## 233-234. INTRODUCTORY ANALYTICAL PHYSICS III AND IV

Throughout the year. Credit three hours a term. (Physics 233 is also offered in the spring term, T Th S 11:15, for those students who failed the course in the

preceding fall term but who have passed Physics 235 or the equivalent.) Prerequisites, Physics 122 and coregistration in Physics 235-236 and in Mathematics 293-294, or consent of the instructor. Course 233 is prerequisite to 234. (Courses 233-234 and 235-236 replace the former 223-224 or 225-226.) Lectures, T Th 9:05 or 11:15 or 12:20. Two discussion periods every week, as assigned. Each term the course is subdivided into three independent sections, each of no more than 180 students (and for each lecture, no more than 90 students). Fall term, Messrs. Orear, Silverman, Talman, Sheppard, and Staff. Spring term, Messrs. Edwards, Bowers, Silsbee, and Staff.

A survey of electric and magnetic fields including a review and an extension of the study of static fields and their sources. Fields in simple dielectrics, charges in motion, time-varying fields, induced electromotive force, fields in magnetic materials, energy of charge and current distributions, electrical oscillations, electromagnetic waves; reflection, refraction, dispersion, and polarization. Superposition of waves; interference and diffraction. Selected topics from contemporary physics such as relativity, quantum effects, atomic and X-ray spectra, nuclear structure and reactions, particle physics, and solid state physics. At the level of *Physics for Students of Science and Engineering*, 1966, by Halliday and Resnick, and of *Elementary Modern Physics* by Weidner and Sells.

#### 235-236. LABORATORY TO ACCOMPANY PHYSICS 233-234

Throughout the year. Credit one hour a term. Must be taken with Physics 233-234. Course 235 is prerequisite to 236. (Course 235-236 is the laboratory part of the former 223-224 or 225-226.) One two-hour period every week, as assigned. Messrs. Lee, Loh, Talman, and Staff.

Experiments include electrical measurements, physical electronics, optics, solid-state and nuclear physics.

#### 237-238. INTRODUCTORY ANALYTICAL PHYSICS III AND IV

Throughout the year. Credit four hours a term. Prerequisites, Physics 121-122 and invitation from the instructor. Essentially an Honors section of 233-234 and 235-236. Enrollment limited to about 40. Course 237 is prerequisite to 238. T W Th F 9:05 and one laboratory every week, M T W or Th 2-4:25. Fall term, Mr. Fitchen and Staff. Spring term, Mr. Delvaille and Staff.

Topics include those (none omitted) in Physics 233-234 and 235-236, but their treatment is generally more analytical and somewhat more intensive. At the level of *Electricity and Magnetism* by Purcell (Berkeley Physics Course, Vol. II), *Optics* by Rossi, and *Elementary Modern Physics* by Weidner and Sells.

#### 303. INTERMEDIATE MECHANICS

Fall term. Credit three hours. Prerequisite, Physics 208 (or 102 with special permission), and at least coregistration in Mathematics 213, 221, or 293, or consent of the instructor. T Th S 9:05. Mr. Mahr.

Newtonian mechanics, conservation laws, central forces, oscillation systems, wave propagation, and relativity. At the level of *Physical Mechanics* by Lindsay.

#### #305. THE TWENTIETH-CENTURY REVOLUTION IN PHYSICS

Fall term. Credit four hours. Prerequisites, Physics 208H (or 208 with special permission), and coregistration in Mathematics 221 or 293, or consent of the instructor. Intended for Option A physics major students. M W F 8 and M or T 2:30. Mr. Sproull.

Developments leading to modern physical concepts such as quantum theory of radiation, quantum mechanics, and atomic structure. At the level of the first half of *Fundamentals of Modern Physics* by Eisberg.

### 307. OPTICS AND WAVE MOTION

Fall term. Credit four hours. Prerequisites, Physics 209 or 303, and Mathematics 213, or consent of the instructor. Lectures, T Th S 12:20 and T 2:30. Mr. Sievers.

Properties of waves (electromagnetic, mechanical, acoustic, etc.), velocity of light, polarization, interference phenomena, Huygens' and Fermat's principles, Fraunhofer and Fresnel diffraction with application to image formation, double refraction, optical activity, photons and phonons, coherence phenomena and lasers. At the level of *Fundamentals of Physical Optics*, third edition, by Jenkins and White, and *Radiation and Optics* by Stone.

### #310. INTERMEDIATE EXPERIMENTAL PHYSICS

Either term. Credit four hours. Prerequisites, Physics 208 (or 102 with special permission), and Mathematics 112 or 192, or consent of the instructor. Laboratory M W 1:25-4:25. Lecture, F 2:30-4:25. An additional laboratory section will be opened in the spring term T Th 1:25-4:30 if registration exceeds 36 students. Messrs. Pohl, Read, Narayanamurti, and Staff.

Lectures on topics in experimental techniques. Selected laboratory experiments to suit the student's interests, on such subjects as resonance phenomena, electricity, magnetism, optics, spectroscopy, and modern physics.

### 311-312. TEACHING PRECOLLEGE PHYSICS

Throughout the year. Credit one or two hours a term. Prerequisites, two years of college physics and an interest in the teaching of science at an introductory level. Offered only if enrollment exceeds 10 students. Course 311 is not prerequisite to 312. T 1:25-4:25. Messrs. Parratt and Greisen.

Seminars and laboratory work. Emphasis is on the nature and design of recent precollege programs in physics and in physical science. Underlying concepts and purposes are stressed, and current trends evaluated. Laboratory work provides experience with recently developed instructional materials, and opportunity for new developments by the students.

### #319. ANALYTICAL MECHANICS

Fall term. Credit four hours. Prerequisites, Physics 208H (or 208 with special permission) or 234, and coregistration in Mathematics 421, or consent of the instructor. T Th S 9:05 and Th or F 1:25. Mr. Silsbee.

Analytical mechanics of material particles, systems of particles and rigid bodies; oscillating systems; planetary motion, stability of orbits; collisions; Euler's equations, gyroscopic motion; Lagrange's equations; Hamilton's equation; relativistic mechanics. At the level of *Principles of Mechanics*, third edition, by Synge and Griffith, or of *Mechanics*, second edition, by Symon.

### 322. PRINCIPLES OF ELECTRICITY

Spring term. Credit four hours. Prerequisites, Physics 303 (and preferably 307 and 310), and Mathematics 221, 294, 331 or 315, or consent of the instructor. M W F 11:15 and Th 1:25. Mr. Cotts.

Topics selected from Physics 325-326, treated with less mathematical sophistication. At the level of *Electricity and Magnetism* by Duckworth, and of *Electricity and Magnetism* by Purcell (Berkeley Physics Course, Vol. II).

## #325-326. ELECTRICITY, MAGNETISM, AND PHYSICAL OPTICS

Throughout the year. Credit four hours each term. Prerequisites, same as for Physics 319. Course 325 is prerequisite to 326. Lectures, T Th S 11:15 and Th 1:25. Preliminary examinations will be held at 7:30 p.m. on Oct. 11, Nov. 15, Feb. 28, and Apr. 10. Fall term, Mr. Pohl. Spring term, Mr. Gottfried.

Electrostatics: Laplace and Poisson equations, boundary value problems, dielectrics. Magnetostatics: magnetic media, boundary conditions, mechanical and field energy. Electrodynamics: wave equation, Maxwell's equations and their applications, transmission lines, wave guides, radiation from a moving charge. Physical optics: reflection, refraction, dispersion, polarization, Fresnel and Fraunhofer diffraction, lasers and masers. Special relativity. At the level of *Foundations of Electromagnetic Theory* by Reitz and Milford, *Electricity and Magnetism* by Slater and Frank, and *Optics* by Sommerfeld.

## #342. KINETIC THEORY AND THERMODYNAMICS

Spring term. Credit four hours. Prerequisites, Physics 303 or 319 (or 305 with special permission), and Mathematics 221 or 294 or 315, or consent of the instructor. T Th S 9:05 and either M or T 2:30. Mr. Reppy.

Concepts of temperature, laws of thermodynamics, Carnot cycles, entropy, thermodynamic relations, free energies, phase equilibrium, multicomponent systems, chemical reactions, and thermodynamic stability criteria. Application of thermodynamics to physical systems including gases, paramagnetic solids, and electromagnetic radiation. Normal and Poisson distributions, and the random walk problem. Introduction to statistical mechanics including a treatment of Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics with applications. Elementary transport theory. At the level of *Fundamentals of Statistical and Thermal Physics* by Reif, and *Thermal Physics* by Morse.

## 355-356. INTERMEDIATE ELECTRODYNAMICS

Throughout the year. Credit three hours each term. Prerequisites, Physics 234 and 236, and coregistration in Mathematics 421, or consent of the instructor. Course 355 is prerequisite to 356. (Replaces Physics 337). Primarily for students of engineering. Lectures, M W F 10:10. Fall term, Mr. Clark. Spring term, Mr. Nelkin.

Vector calculus. Electrostatic fields, Laplace and Poisson equations and boundary value problems, dielectrics, magnetostatic fields, permeable media. Maxwell's equations and wave equations. Waves in free space and in media. Application of Maxwell's equations to wave guides, plasmas, and magneto-hydrodynamics. Special relativity. Application of the wave equation to radiation: antennas, scattering of light, reflection, diffraction, polarization, and dispersion. At the level of (for first term) *Foundations of Electromagnetic Theory* by Reitz and Milford, *Introduction to Electromagnetic Theory* by Owen, and (for the second term) *Classical Electromagnetic Radiation* by Marion.

## #360. INTRODUCTORY ELECTRONICS

Either term. Credit three hours. Prerequisite, Physics 208 or 236, or consent of the instructor. Lectures and laboratory, M W F or T Th F 2-4:25. Messrs. Cotts, Ash, Sheppard, and Staff.

Introduction to the principles of semiconductor devices, of electronic components and circuits, and to the operating characteristics of power supplies, amplifiers, oscillators, switching and timing circuits, etc. At the level of *Elementary Electronics* by White.

## 402. BIOPHYSICS

Spring term. Credit four hours. Prerequisites, Physics 200 or 209 or 234, two years of college chemistry, two years of college biology, Mathematics 112, and permission of the instructor. T Th 12:20 and conference hours to be arranged. Mr. Barnes.

## #410. ADVANCED EXPERIMENTAL PHYSICS

Either term. Credit four hours. Prerequisites, Physics 310 or 360, and 303 or 319, and 322 or 325 or 355, or consent of the instructor. Limited to seniors except by special permission. Laboratory, T W or Th F 1:25-4:25. Lecture, M 2:30-4:25. Messrs. Hartman, Batterman, Cassel, Cotts, Cuykendall, Mahr, Mistry, Reppy, Siegel, Stein, Talman, and Woodward.

Lectures and problems on selected topics in experimental concepts and techniques. About seventy different experiments are available among the subjects of mechanics, acoustics, optics, spectroscopy, electrical circuits, electronics and ionics, heat, X-rays, crystal structure, solid state physics, cosmic rays, and nuclear physics. The student is expected to perform four to eight experiments, selected to meet his individual needs. Stress is laid on independent work.

## 431-432. INTRODUCTORY THEORETICAL PHYSICS I AND II

Throughout the year. Credit four hours a term. Prerequisites, (a) completion of an undergraduate major program in a natural science including, for Course 431, the equivalent of Physics 207-208 and, for direct entry into Course 432, the equivalent of Physics 303 and 322, and (b) coregistration in Mathematics 421-422, or consent of the instructor. Primarily for graduate students in a science other than physics (e.g., in chemistry, engineering, or biology) who wish a shortcut to more advanced courses (e.g., to Physics 443, 562 or 572). (Course 432 replaces essentially Course 431 as offered in previous years.) M W F S 11:15. Fall, Messrs. Bethe and Irvine. Spring, Mr. Brandow.

During the fall term emphasis is on particle mechanics and potential theory. Topics include Newtonian mechanics, Lagrange's equations, Hamilton's principle and equation, central forces, rigid body motion, electrostatics, boundary value problems, dielectric and magnetic materials, and Maxwell's equations. At the level of the first thirteen chapters of *Classical Dynamics* by Maricn and the first eight chapters of *Introduction to Electromagnetic Fields and Waves* by Corson and Lorrain.

During the spring term emphasis is on waves and radiation. Topics include normal modes, waves in mechanical media, electromagnetic waves, normal modes of the electromagnetic field, reflection, refraction, interference, diffraction, dispersion, wave guides, and radiation from an accelerated charge. At the level of *Classical Dynamics* by Marion and *Classical Electromagnetic Radiation* by Marion.

## 436. MODERN PHYSICS

Spring term. Credit four hours. Prerequisites, Physics 322 or 431, or consent of the instructor. T W Th F 12:20. Mr. Woodward.

Fundamentals of quantum theory, and selected topics in atomic, solid state, particle and nuclear physics. At the level of *Fundamentals of Modern Physics* by Eisberg.

## #443. ATOMICS AND INTRODUCTORY QUANTUM MECHANICS

Fall term. Credit four hours. Prerequisites, Physics 305, 319, and 325 or 355 or 432, and Mathematics 316 or 421, or consent of the instructor. Very few

students may advisedly take Physics 572 before taking this course. T Th S 10:10 and M 9:05 or 2:30. Mr. McDaniel.

Difficulties with the classical interpretations of atomic properties are resolved in terms of quantum mechanics. At the level of *Introduction to Quantum Theory* by Park.

#### #444. NUCLEAR AND HIGH-ENERGY PARTICLE PHYSICS

Spring term. Credit four hours. Prerequisite, Physics 443 or consent of the instructor. T Th S 10:10 and T 1:25. Messrs. Orear and Sharefkin.

Behavior of high-energy particles and radiation; elementary particles; basic properties of nuclei; nuclear reactions; nuclear forces; cosmic rays; general symmetries and conservation laws of nature. At the level of *Nuclei and Particles* by Segre.

#### #454. INTRODUCTORY SOLID STATE PHYSICS

Spring term. Credit four hours. Prerequisite, Physics 443, or Chemistry 593, or consent of the instructor. M W F 9:05 and M 1:25. Mr. Ashcroft.

A semiquantitative introduction to modern solid state physics, including lattice structure, lattice vibrations, thermal properties, electron theory of metals and semiconductors, magnetic properties, and superconductivity. At the level of *Introduction to Solid State Physics*, third edition, by Kittel.

#### 490. INDEPENDENT STUDY IN PHYSICS

Either term. Credit one to three hours a term. Prerequisites, Physics 310 and 322, or equivalent. Ordinarily limited to seniors. Hours to be arranged. Permission of the professorial staff member under whose direction the work is to be done *must be obtained before registration*.

Individual project work. Reading or laboratory work in any branch of physics. Commonly associated with the Physics 410 laboratory.

#### 491-492. SENIOR SEMINAR

Throughout the year. Credit one hour each term. Prerequisite, consent of the student's major adviser (or of the instructor if the student is not majoring in physics). Offered only if registration exceeds six students. Course 491 is not prerequisite to 492. Intended primarily for physics majors in their senior year. Fall term, T 2:30-4:25. Mr. Edwards. Spring term, W 2:30-4:25. Mr. Parratt.

Practice in the organization, oral presentation, and discussion of selected topics in physics.

#### 500. INFORMAL GRADUATE LABORATORY

Either term. Credit one to three hours a term. Associated with the Physics 510 laboratory. Primarily for graduate students who have at least one year of college physics but do not have the prerequisites for Physics 510. T W or Th F 1:25-4:25. Instructing staff same as for Physics 410.

#### 505-506. DESIGN OF ELECTRONIC CIRCUITRY

Throughout the year. Credit two hours each term. Prerequisites, Physics 360, Mathematics 315, and familiarity with complex representation of a-c signals, or consent of the instructor. Course 505 is prerequisite to 506. T Th 9:05. Mr. Littauer.

Circuit techniques and design in electronic measurement and instrumentation with emphasis on pulse wave forms. A limited amount of laboratory practice. At the level of *Pulse Electronics* by Littauer.

## 510. ADVANCED EXPERIMENTAL PHYSICS

Either term. Credit three hours per term. Prerequisites, Physics 410 and 443, or consent of the instructor. At least one term of Physics 510 is expected of every graduate physics student during his first year at Cornell. Laboratory, T W or Th F 1:25-4:25. Instructing staff same as for Physics 410.

About seventy different experiments are available among the subjects of mechanics, acoustics, optics, spectroscopy, electrical circuits, electronics and ionics, heat, X-rays, crystal structure, solid state, cosmic rays, and nuclear physics. The student is expected to perform four to eight experiments, selected to meet his individual needs. Stress is laid on independent work.

## 520. ADVANCED EXPERIMENTAL PROJECTS

Either term. Credit three hours per term. Prerequisites, Physics 510 and consent of the instructor. Hours to be arranged. Mr. Littauer and Staff.

Projects of modern topical interest that involve some independent development work by the student. Opportunity for more initiative in experimental work than is possible in course Physics 510. One or two projects typically comprise a term's work (e.g., with the Cornell synchrotron and/or with a liquid helium cryostat).

## 561-562. THEORETICAL PHYSICS I AND II

Throughout the year. Credit four hours each term. Prerequisites, Physics 319 and 325, and coregistration in Mathematics 415 or 423, or consent of the instructor. Course 561 or 432, and either 443 or coregistration in 572, are prerequisite to 562. Fall term, M 10:10 and T Th S 11:15. Mr. Nelkin. Spring term, M 12:20 and T Th S 11:15. Mr. Chester.

*Fall term.* Mechanics (about 7 weeks): variational principles, Lagrangian mechanics with applications, Hamiltonian mechanics and Poisson brackets, small vibrations and normal modes, and symmetry principles. Electrodynamics (about 8 weeks): Maxwell's equations, electromagnetic potentials, stress energy, wave guides, Fresnel theory, and introduction to relativity. At the level of *Mechanics* by Landau and Lifshitz and of *Electricity and Magnetism* by Jackson.

*Spring term.* Electrodynamics and relativity (about 6 weeks): radiation, Lienard-Wiechert potentials, multipoles, relativity (continued), and relativistic applications. Statistical physics (about 9 weeks): laws of thermodynamics, introduction to phase change, ensemble theory, thermodynamic fluctuations, Fermi-Dirac and Einstein-Bose statistics with applications, transport phenomena, and interacting systems. At the level of *Electricity and Magnetism* by Jackson, and of *Statistical Physics* by Landau and Lifshitz.

## 566. TOPICS IN THEORETICAL ASTROPHYSICS

Spring term. Credit three hours. Prerequisite, graduate student status with a good background in physics, or consent of the instructor. This course and Astronomy 560 alternate by year. Physics 566 will be offered in the spring term of 1968. M Th F 1:25. Mr. Salpeter.

Typical topics are: theory of stellar structure, theory of stellar atmospheres, and theories of interstellar medium. Topics and/or their treatment will vary from year to year.

## 572. QUANTUM MECHANICS

Either term. Credit four hours. Prerequisites, Physics 443, 561 (or 432), and at least coregistration in Mathematics 415 or 423, or consent of the instructor. M W F 11:15 and S 9:05. Fall term. Mr. Salpeter. Spring term, Mr. Bethe.

Principles of wave mechanics. Illustrative solutions of the Schrödinger equation, scattering, Dirac's formulation of quantum mechanics, transformation theory, and approximation methods. Symmetries: angular momentum, spin, the exclusion principle. At the level of *Quantum Mechanics* by Messiah.

#### 574. INTERMEDIATE QUANTUM MECHANICS

Spring term. Credit four hours. Prerequisites, Physics 572 and at least co-registration in Physics 562 and in Mathematics 416, or consent of the instructor. M W F S 10:10. Mr. K. Wilson.

Discussion of various applications of quantum mechanics such as collision theory, theory of spectra of atoms and molecules, theory of solids, emission of radiation, and relativistic quantum mechanics. At the level of *Quantum Mechanics of One- and Two-Electron Atoms* by Bethe and Salpeter.

#### 612. EXPERIMENTAL ATOMIC AND SOLID STATE PHYSICS

Spring term. Credit three hours. Prerequisites, Physics 510, 561, and 562, or consent of the instructor. M W F 2:30. Mr. Fitchen and Staff.

Lectures on techniques and design principles, with emphasis on the study of solids by their interactions with electromagnetic fields. Topics include sources and detectors, scanning and resonance techniques, signal processing, sample characterization, and environmental control. Illustrative examples from the recent literature are studied in detail.

#### 614. EXPERIMENTAL HIGH-ENERGY PHYSICS

Spring term. Credit three hours. Prerequisites, Physics 510, 561, and 562, or consent of the instructor. T Th F 1:25. Mr. Browman and Staff.

Design principles of high-energy apparatus: accelerators, beam transport, detection systems, etc., with examples of their applications. Practice in relativistic kinematics. Statistical analysis in the design and interpretation of experiments. Discussion of the pitfalls encountered in actual experiments, with examples from the recent literature.

#### 635. SOLID STATE PHYSICS

Fall term. Credit three hours. Prerequisite, Physics 572, and statistical physics at the level of Physics 562, or consent of the instructor. T Th S 11:15. Mr. Bowers.

An introduction to solid state physics including studies of lattice vibrations, the electronic structure of metals and of insulators, with applications to electrical, thermal, and transport properties.

#### 636. ADVANCED SOLID STATE PHYSICS

Spring term. Credit three hours. Prerequisite, Physics 635 or consent of the instructor. T Th S 11:15. Mr. Mermin.

The concepts developed in Physics 635 are applied to a survey of the Fermi surface in metals, localized states, magnetism, neutron and light scattering, and phenomenological superconductivity.

#### 645. NUCLEAR PHYSICS

Fall term. Credit three hours. Prerequisite, Physics 572 or consent of the instructor. M W F 11:15. Mr. Hand.

Properties of nuclei, detection of particles, alpha decay, fission and thermonuclear reactions, gamma decay, beta decay, two-nucleon systems, nuclear models, and nuclear reactions.



## 646. HIGH-ENERGY PARTICLE PHYSICS

Spring term. Credit three hours. Prerequisite, Physics 574 or 645 or consent of the instructor. M W F 11:15. Mr. Silverman.

The physics of nucleons, mesons, and strange particles from an experimental point of view. High-energy phenomena, as opposed to classical nuclear physics, will be stressed. At the level of *An Introduction to Elementary Particles* by Williams.

NOTE: In courses above 650 the final grades will be only S or U.

## 651. ADVANCED QUANTUM MECHANICS

Fall term. Credit three hours. Prerequisite, Physics 574 or consent of the instructor. M W F 10:10. Mr. Kinoshita.

Relativistic quantum mechanics with emphasis on perturbation techniques. Extensive applications to quantum electrodynamics. Introduction to renormalization theory. At the level of *Relativistic Quantum Mechanics* by Bjorken and Drell.

## 652. QUANTUM FIELD THEORY

Spring term. Credit three hours. Prerequisite, Physics 651 or consent of the instructor. M W F 10:10. Mr. Yennie.

Canonical field theory, model field theories, Green's functions, renormalization. Introduction to analytic properties of scattering amplitudes and dispersion relations. Applications to strong interactions. At the level of *Relativistic Quantum Fields* by Bjorken and Drell.

## 653. STATISTICAL PHYSICS

Fall term. Credit three hours. Prerequisites, Physics 562 and 572, or consent of the instructor. T Th S 10:10. Mr. Wilkins.

A survey of topics in contemporary statistical physics, such as the Boltzmann equation, plasmas, sound propagation, phenomenological Fermi liquid theory, critical phenomena of simple fluids and ferromagnetics, classical fluids, introduction to Kubo formulae and Green's functions, and superfluids. At the level of *Statistical Physics* by Landau and Lifshitz.

## 654. THEORY OF MANY-PARTICLE SYSTEMS

Spring term. Credit three hours. Prerequisites, Physics 635 and 653, or consent of the instructor. T Th S 10:10. Mr. Ambegaokar.

The equilibrium and transport properties of microscopic systems of many particles at zero and finite temperatures. The thermodynamic Green's function techniques are developed and applied to a variety of systems. Probable topics for discussion are the electron gas at high densities, the normal Fermi liquid, superconductivity, ferromagnetism, and the anharmonic crystal.

## [657. THEORY OF NUCLEI]

Not offered in 1967-68.

Fall term. Credit three hours. Prerequisites, Physics 574 and 645, or consent of the instructor. Offered in alternate years and only if registration exceeds nine students. M W F 9:05. Mr. Bethe.

## 661. HIGH-ENERGY PHENOMENA

Fall term. Credit three hours. Prerequisite, Physics 651 or consent of the instructor. Offered only if registration exceeds nine students. M W F 10:10. Mr. Gottfried.

Topics of current interest in the theory of strong interactions. At the level of *Dispersion Relations* by Klein.

#### 680. SPECIAL TOPICS

Either term. Credit one to three hours a term. Upon sufficient demand, seminars will be arranged in topics not currently covered in regular courses. Typical topics are group theory, analyticity, weak interactions, superfluids, stellar structure and evolution, plasma physics, cosmic rays, relativity theory, low-temperature physics, X-ray spectroscopy or diffraction, magnetic resonance, etc. For 1967-68: Fall term: Real Metals, Messrs. Wilkins and Ashcroft; and Dynamics of Strong Interactions, Mr. Gross. Spring term: Theory of Liquids, Mr. Egelstaff; Recent Developments in Quantum Field Theory, Mr. Kinoshita; and Collective Excitations (Phonons, Spinwaves, etc.) in Condensed Materials and Their Experimental Properties, Mr. Krumhansl.

#### 690. INDEPENDENT STUDY IN PHYSICS

Either term. Credit one to three hours a term. Special study in some branch of physics, either theoretical or experimental, under the direction of any professorial member of the physics staff. Permission of the staff member *must be obtained before registration*.

## PSYCHOLOGY

Mr. H. Levin, Chairman; Messrs. H. Alker, M. Anisfeld, H. Bernbach, U. Bronfenbrenner, R. D. Darlington, W. C. Dilger, Mrs. Eleanor J. Gibson, Messrs. J. J. Gibson, B. Halpern, S. C. Jones, A. Kendon, W. W. Lambert, J. B. Maas, R. B. MacLeod, L. Meltzer, U. Neisser, F. Rosenblatt, T. A. Ryan, M. Seligman, F. Stollnitz, and R. Wilcox.

**THE MAJOR.** Prerequisites for admission are: (a) ten hours of psychology which must include Psychology 101, Child Development 115, and one other course at the 200 level or above; (b) a cumulative average of C+ in courses in Psychology with no grade below C in the prerequisites; (c) completion of Distribution requirements by the end of sophomore year; (d) acceptance by the admissions committee of the Department of Psychology.

Application forms may be obtained at the departmental office and must be filed two weeks before the preregistration period.

Requirements for the major are:

(a) A minimum of 30 additional hours in Psychology. These must include at least four laboratory courses, one of which must be from the Basic Processes group (305, 306, 307).

(b) Completion, no later than the end of the junior year, of an approved course in statistics, or the passing of an achievement examination administered by the Department.

With permission of the major adviser, two of the following courses in other departments, may be accepted toward the major requirements: Child Development and Family Relationships 315, 317, 323, 360, 364, 374 (Home Economics), or courses at the 400 level with permission of the adviser; Industrial and Labor Relations 310; Biological

Sciences 421, 521-522. *One* of the two courses from outside the Department may also be chosen from the following: Industrial and Labor Relations 201, 311, 410; Rural Education 451, 453, 454 (Agr.).

**CONCENTRATION IN SOCIAL PSYCHOLOGY.** In cooperation with the Department of Sociology, a concentration in social psychology is available. Psychology majors who wish to specialize in social psychology must meet the prerequisites for a major in psychology and take the following courses:

- a. A laboratory course in social psychology: Psychology 481, 482, or 683.
- b. Three additional laboratory courses in psychology, including at least one from: Psychology 305, 306, 307.
- c. One survey course in social psychology: Psychology 381, 383, 386, or 388.
- d. One course in sociology: Sociology 330, 402, or 441.
- e. One course in social methodology: Psychology 412 or Sociology 321.
- f. One independent project or one seminar in social psychology: Psychology 488, 496, 497, 583, 584, 681, Sociology 691 or 692.

**THE HONORS PROGRAM.** Prospective candidates for Honors are encouraged to file applications for provisional Honors status as early as possible but not later than December 15 of the junior year. For acceptance, the candidate must have, at a minimum, a cumulative grade average of B in all courses in psychology completed at the time of application.

Honors students are given the opportunity for experience in original investigation with the help of members of the faculty, and for some extensive reading in the field. Planning for this investigation may begin in the junior year. In the senior year, Honors students take an Honors seminar (491) and prepare a thesis (492). Final Honors standing is based upon a written thesis and an oral defense of the thesis, as well as upon general academic performance.

**DISTRIBUTION REQUIREMENTS.** The Distribution requirement in social sciences is satisfied in psychology by Psychology 101 and Child Development 115 (Home Economics), or by one of these and any other course offered by the Department of Psychology.

**PARTICIPATION IN EXPERIMENTS.** Participation in psychological experiments may be required as a part of course work for any student when the instructor considers that it will be to the student's educational advantage.

#### 101. INTRODUCTION TO PSYCHOLOGY: BASIC PROCESSES IN HUMAN BEHAVIOR

Either term. Credit three hours. Open to freshman. Those planning to major in psychology should begin with this course. Three lectures and one demonstration-discussion seminar per week. Fall term: lectures, M W F 10:10,

seminars to be assigned. Spring term: lectures, M W F 10:10, seminars to be assigned. Mr. Maas.

Emphasizes the study of human behavior from the standpoint of the basic processes, including the following: brain functioning, intelligence, perception, learning, motivation, emotion, personality, abnormal behavior, and psychiatry. The course centers upon contemporary problems confronting psychologists and is supported by special films, guest speakers, and an Honors seminar.

### INTRODUCTION TO PSYCHOLOGY: DEVELOPMENT OF HUMAN BEHAVIOR

(Child Development 115)

Fall term. Credit three hours. Open to freshmen. Psychology 101 not prerequisite. Three lectures and an optional section meeting. Lectures, M W F 11:15, sections to be announced. Mr. Bronfenbrenner.

Concerned with the behavior of man as a social organism. Primary attention is given to the impact of environmental and social forces in the intellectual, emotional, and social development of the person from infancy through adulthood.

### 103. EDUCATIONAL PSYCHOLOGY

Spring term. Credit three hours. Prerequisite, an introductory course in psychology. M W F 9:05. Mr. Levin.

The major facts and principles of psychology bearing on educational practice and theory. Human learning, cognitive development abilities, and group processes as they influence classroom learning will be stressed. Recent educational advances such as new curricula and programed learning will be discussed in the light of contemporary psychological theories.

### 201. INTRODUCTION TO EXPERIMENTAL PSYCHOLOGY

Either term. Credit four hours. Prerequisite, Psychology 101 or Child Development 115, or consent of the instructor. Lectures M W F 12:20. Laboratory Th 8-9:55, 10:10-12:05, 2:30-4:25, or 7:30-9:25 p.m. Mr. Seligman.

An analysis of current and classical research problems selected for their relevance to general theoretical issues and illustrative of modern research methods in psychology. Specific topics will be chosen from the fields of perception, learning, motivation, and the like. Provides an introduction to laboratory methods and experimental design useful in many of the advanced courses in psychology.

### 206. PSYCHOLOGY IN BUSINESS AND INDUSTRY

Spring term. Credit three hours. Prerequisite, Psychology 101 or C.D. 115, or consent of the instructor. M W F 9:05. Mr. Maas.

A survey of psychological research in problems of concern to business and industry. The course is divided into three units: (1) personnel selection and placement (interviewing, psychological testing); (2) conditions of efficient production (work methods, accident control, training, counseling, group dynamics, job satisfaction); and (3) advertising, market and motivation research.

### 212. MODERN PSYCHOLOGY IN HISTORICAL PERSPECTIVE

Spring term. Credit four hours. Prerequisite, Psychology 101 or Child Development 115, or consent of the instructor. Lectures, M W F 1:25. Mr. MacLeod.

An examination of the broad problems of psychology, e.g., mind and body, the basis of knowledge, the basis of conduct, as they have been envisaged at various periods of history. Special emphasis is laid on the relation between psychological thinking and development in philosophy, religion, the sciences, literature, and the arts. Designed for the general student; recommended but not required for prospective majors.

#### 281. INTERPERSONAL RELATIONS AND SMALL GROUPS

(Also Sociology 281)

Fall term. Credit three hours. Prerequisite, Sociology 101, or Child Development 115. M W F 11:15.

The presentation and development of selected theories offered to account for why people relate to one another the way they do and the social structures which emerge from, and condition, these relationships. Emphasis will be upon social psychological processes in small groups, such as athletic teams, committees, fraternities, engaged couples, etc. These perspectives are compared and evaluated.

#### 284. INTRODUCTION TO PERSONALITY AND SOCIAL PSYCHOLOGY

(Also Sociology 284)

Spring term. Credit four hours. Prerequisite, a course in psychology. T Th 10:10 and one hour discussion section to be arranged. Mr. Meltzer and Staff.

The approaches of several theories—psychoanalytic, cognitive, and behavioral—are evaluated in relation to selected topics such as motivation traits, attitudes, conformity, prejudice, and group behavior. Students will read extensively in modern and classic attempts to explicate the human condition. Lectures will evaluate these perspectives in terms of recent research.

#### 305. BASIC PROCESSES: PERCEPTION

Fall term. Credit four hours. Prerequisites, Psychology 101 and 201, or 306, or consent of the instructor. Lectures M W 9:05, Laboratory Th 2:30-4:25. Mr. Neisser.

An account of the ways in which we register and apprehend the environment. The experimental study of sensory input, of psychophysical correspondence, of space, motion, objects, and events, and the relation of perceiving to everyday behaving and thinking.

#### 306. BASIC PROCESSES: LEARNING

Spring term. Credit four hours. Prerequisites, Psychology 101 or consent of the instructor. Lectures T Th 9:05, Laboratory T or Th 2:30-4:25.

The fundamental conditions and principles of learning, both animal and human. The basic phenomena of operant conditioning, human verbal and motor learning, discrimination learning, and serial learning will be studied experimentally. Traditional and contemporary theories of learning will be reviewed, and selected experimental literature will be discussed with special emphasis upon recent developments in the field.

#### 307. BASIC PROCESSES: MOTIVATION

Fall term. Credit four hours. Prerequisites, Psychology 101 and 201, or 306, or consent of the instructor. Lectures W F 10:10, Laboratory T 2:30-4:25. Mr. Ryan.

Factors controlling the initiation, direction, and intensity of activity. Methods of research with emphasis upon experimental and statistical controls. Evaluation of evidence on major theories of motivation such as instinct theory, psychoanalysis, and behavioristic drive theory.

### 309. DEVELOPMENT OF PERCEPTION AND ATTENTION

Spring term. Credit four hours. Prerequisite, Psychology 305. T Th S 10:10. Mrs. Gibson.

Selection and reduction of stimulus information in ontogenetic and phylogenetic development; theories of perceptual learning and experimental methods of testing them.

### [311. FEELING AND EMOTION]

Not offered in 1967-68.

Fall term. Credit 4 hours. Prerequisite, 9 hours in Psychology or consent of the instructor.

### 313. COGNITIVE PROCESSES

Fall term. Credit four hours. For juniors or seniors. Prerequisites, six hours of psychology or Honors standing (in any department), or consent of the instructor. M W F 11:15. Mr. Anisfeld.

An examination of the mental processes involved in language learning and use, concept formation, and problem solving; relation between language and thinking. Students are required to carry out a supervised experimental or observational study.

### NEUROBIOLOGY AND BEHAVIOR

(Biological Sciences 320)

Spring term. Credit three hours. Prerequisites, Biological Sciences 101-102 or 103-104. T Th S 11:15. Messrs. Eisner, Emlen, Gilbert, Halpern, O'Brien, Rosenblatt, and Mrs. Salpeter.

Evolution of behavior, cueing of behavior, social and non-social behavior, neuroanatomy, neurophysiology, neurochemistry, neural networks, memory.

### BRAIN MECHANISMS AND MODELS

(Biological Sciences 521-522)

Throughout the year. Credit four hours a term. Prerequisites, one year of calculus and one year of biological sciences or psychology, and consent of the instructor. Hours to be arranged. Mr. Rosenblatt with assistance of guest lecturers.

### 323. PHYSIOLOGICAL PSYCHOLOGY

Fall term. Credit four hours. Prerequisites, Psychology 101 or its equivalent, Psychology 201 or a 300 level laboratory course in Psychology, Biological Sciences 101-102 or its equivalent, and Chemistry 103-104 or its equivalent. T Th 9:05 and four hours of laboratory to be arranged. Mr. Halpern.

An examination of relationships between neuroendocrine, neural, metabolic, neuromotor behavior, and behavior.

### [324. PSYCHOBIOLOGY]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisites, a grade of at least B in Psychology 323 and consent of the instructor.

### 325. ABNORMAL PSYCHOLOGY

Fall term. Credit four hours. Prerequisites, nine hours of psychology, or consent of the instructor. T Th S 9:05.

An introduction to the study of disordered behavior. Description of major syndromes, investigations and theories of etiology, and approaches to treat-

ment will be covered in an attempt to introduce the student to major concepts and problems in this area.

### [326. COMPARATIVE PSYCHOLOGY]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, Psychology 101, or Biological Sciences 320, or consent of the instructor. T Th 2:30 and laboratory hours to be arranged.

Similarities and differences in the behavior of animals ranging from the unicellular forms to man. Psychological and ethological approaches to animal behavior will be discussed.

### [335. PSYCHOLOGICAL PROBLEMS OF ADVERTISING AND MARKET RESEARCH]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisites, Psychology 101, three additional hours of psychology, junior or senior standing and consent of the instructor, plus one hour to be arranged. Mr. Maas. M 2:30-4:25.

Design of fundamental research in laboratory, field, and survey studies of advertising and consumer behavior. Special attention is given to techniques of questionnaire construction, scaling, sampling, interviewing, and testing. Students work on selected research projects, enabling them to become familiar with collection, processing, and analysis of data.

### 350. STATISTICS AND RESEARCH DESIGN

Spring term. Credit four hours. Prerequisite, Psychology 101. M W F 11:15. Mr. Darlington.

Devoted about equally to elementary applied statistics — both estimation and hypothesis testing — through one-way analysis of variance, and to general problems in the design and analysis of research projects.

### 381. SOCIAL PSYCHOLOGY

(Also Sociology 381)

Either term. Credit four hours. Prerequisites, 3 hours of psychology and 3 hours of sociology. M W F 10:10. Fall term: Mr. Lambert. Spring term: instructor to be announced.

Analysis of the history, concepts, methods, and theories used to describe and conceptualize the ways in which people react to one another in social settings and in the laboratory. Students will work individually or as teams on projects, using experimental or other empirical methods. The topics for investigation in lectures and reading will include socialization, attitude change, communication, interpersonal influence, impression formation, leadership, and propaganda.

### 383. GROUP DYNAMICS

(Also Sociology 383)

Fall term. Credit four hours. Prerequisites, written consent of instructor and 3 hours in psychology and 3 hours in sociology. M W F 11:15. Mr. Hayes.

An analysis of group structures and processes. An essential feature of this course is training in observational methods and techniques of group analysis. Substantial laboratory and field study is required. Original readings are coordinated with the training, research and lectures.

### 386. THEORIES OF PERSONALITY (Also Sociology 386)

Spring term. Credit four hours. Prerequisite, Psychology 101 or consent of the instructor. M W F 12:20. Mr. Lambert.

A critical survey of the concept of personality in literature, the social sciences, and psychology. A number of the modern specialists will be discussed at some length, and recent empirical and experimental work that has grown out of their thought will be analyzed. The empirical relation of personality notions to some philosophical beliefs and literary productions will be considered. The emphasis will be mainly upon "normal" personality.

### 388. ATTITUDES AND ATTITUDE CHANGE

(Also Sociology 388)

Spring term. Credit four hours. Prerequisites, 3 hours of psychology and 3 hours of sociology. M W F 9:05. Mr. Meltzer.

A systematic survey of theory and research on attitudes and attitude change.

## Primarily for Seniors and Graduate Students

### 401. PSYCHOLOGICAL TESTING I

Fall term. Credit four hours. Prerequisites, six hours in psychology, including 201, or a course in elementary statistics. T Th S 11:15. Mr. Darlington.

Emphasis is on the logical and mathematical problems in the interpretation, evaluation, and construction of tests. A brief introduction to the major personality tests will be included. No training in administering tests.

### 402. PSYCHOLOGICAL TESTING II

Spring term. Credit four hours. Prerequisite, Psychology 401 or consent of the instructor. T Th S 11:15. Mr. Darlington.

A more advanced treatment of the topics discussed in Psychology 401.

### 410. INDIVIDUAL DIFFERENCES AND PERSONALITY

Spring term. Credit four hours. Prerequisites, nine hours of psychology, junior or senior standing, or consent of the instructor. Mr. Alker.

Survey of current theory and research in the field of individual differences and personality. A number of lines of investigation will be studied in detail with some emphasis on technique.

### [412. RESEARCH DESIGN IN PERSONALITY AND SOCIAL PSYCHOLOGY]

Not offered in 1967-68.

Spring term. Credit four hours. Open to junior or senior psychology majors, or consent of instructor. Mr. Darlington.

### [414. PRACTICUM AND SEMINAR IN PSYCHOLOGICAL TESTING]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, Psychology 401 or 402. All students must have consent of the instructor. Hours to be arranged.

### 416. PSYCHOLOGY OF LANGUAGE

Spring term. Credit four hours. Prerequisite, Psychology 313 or consent of the instructor. M W 2:30-4:25. Mr. Anisfeld.

An advanced treatment of the nature of the human capacity for language, the reading process, social and psychological aspects of bilingualism, speech perception and production. Instruction will be supplemented by experimental exercises.



**426. EXPERIMENTAL PSYCHOPATHOLOGY**

Spring term. Credit four hours. Prerequisite, Psychology 325 or consent of the instructor. M W 9:05 plus two hour laboratory to be arranged. Mr. Seligman.

The application of experimental methods to behavior disorders. A survey of current investigations of etiology and treatment with special emphasis upon a scientific approach to pathology.

**427. SENSORY FUNCTION**

(Also Biological Sciences 427)

Fall term. Credit three hours. Prerequisite, Biological Sciences 320 or equivalent. T Th F 8. Mr. Halpern and Mr. Tapper.

Sensory receptors and the central nervous system transformation of afferent activity will be considered in relation to human and animal psychophysical data and to the adaptive significance of behavior. The receptor will be examined in terms of anatomy, biochemistry, biophysics of transduction and the central nervous-system control of peripheral input. Information and signal detection theories will be applied.

**428. SENSORY FUNCTION LABORATORY**

(Also Biological Sciences 428)

Spring term. Credit two hours. Prerequisite, Psychology 427. Enrollment limited to fifteen students. Hours to be arranged. Messrs. Halpern and Tapper.

Experiments on the principles of receptor function and afferent neural activity.

**COMPARATIVE VERTEBRATE ETHOLOGY**

(Biological Sciences 421)

Fall term. Credit three hours. Prerequisites, Biological Sciences 101-102, or 103-104 and permission of the instructor. T Th 9:05 and laboratory to be arranged. Primarily for graduate students; juniors and seniors will be accepted to capacity of laboratory. Mr. Dilger.

**461. HUMAN LEARNING AND MEMORY**

Fall term. Credit four hours. Prerequisites, Psychology 101, 201, or 306, and junior or senior standing. T Th S 10:10. Mr. Bernbach.

**462. ADVANCED LEARNING: DISCRIMINATION LEARNING**

Fall term. Credit four hours. Prerequisite, Psychology 306 or consent of the instructor. T Th 2:30 and laboratory hours to be arranged. Mr. Stollnitz.

Performance of human and nonhuman subjects on various types of discrimination problem. Discrimination reversal, transfer, and learning-set formation. Laboratory work will stress individual projects.

**465. MATHEMATICAL BEHAVIOR THEORY**

Spring term. Credit four hours. Prerequisite, one year of calculus. T Th S 10:10. Mr. Wilcox.

The purpose of this course is to give a brief overview of current developments in mathematical psychology and to develop techniques for the application of mathematics to psychological theory. Topics covered include choice behavior, decision theory, psychophysics, memory and learning theory, and information processing models of behavior.

**[466. THEORIES OF VISION]**

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, consent of instructor.

471-472. STATISTICAL METHODS IN PSYCHOLOGY

Throughout the year. Credit four hours each term. Prerequisites, Psychology 101 or Child Development 115, 201 or consent of the instructor. Psychology 471 is prerequisite to 472. Fall term, M W F 1:25. Spring term, M W F 1:25. Mr. Wilcox.

An analysis of the methods for treating various kinds of psychological data. Fall term: tests of significance and confidence limits, analysis of variance and correlation. Spring term: complex designs in analysis of variance, analysis of trends and covariance, multiple and curvilinear correlation, introduction to factor analysis.

476. RESEARCH METHODS IN PSYCHOLOGY—EXPERIMENTAL AND LABORATORY

Fall term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Mr. Stollnitz and Staff.

Instrumentation for the behavioral sciences.

[477. RESEARCH METHODS IN PSYCHOLOGY—INDUSTRIAL AND FIELD]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite Psychology 333 or consent of the instructor.

481. EXPERIMENTAL SOCIAL PSYCHOLOGY

(Also Sociology 481)

Fall term. Credit four hours. Prerequisites, three hours of psychology and three hours of sociology or anthropology. M W F 2:30. Mr. Jones.

Emphasis is on the empirical study of social psychological phenomena. Students will be introduced to empirical laboratory and field methods used in social psychology. Substantive problems will provide the focus for the demonstration and use of these techniques.

482. LABORATORY IN GROUP DYNAMICS

(Also Sociology 482)

Spring term. Credit four hours. Prerequisites, a course in statistics and a course in social or experimental psychology. W 1:25-3:20 and laboratory time to be arranged.

A practicum. Supervised research experience in the design, execution, and analysis of experimental research on topics such as group cohesiveness, group pressures, group goals, leadership, group performance, and interpersonal influence and communication. Students will read and discuss experimental studies as well as pertinent theoretical articles.

488. INDIVIDUAL AND SOCIETY IN THE SOVIET UNION

(Also Sociology 488)

Spring term. Credit four hours. Prerequisite, consent of the instructor. Will be conducted as a seminar. Hours to be arranged. Mr. Bronfenbrenner.

[490. PERSISTING PROBLEMS IN PSYCHOLOGY]

Not offered in 1967-68.

Fall term. Credit four hours. T 2:30-4:25 plus conference hours to be arranged.

An examination of the classic problems of psychology in the light of recent research and theory. Open to senior majors in psychology (or from other fields by permission of the instructor), and recommended for those intending to pursue graduate study.

**491. HONORS SEMINAR AND THESIS**

Fall term, senior year. Credit four hours. M 2:30-4:25. Mr. MacLeod.

**492. HONORS THESIS**

Spring term, senior year. Credit four hours. Time to be arranged. Mr. MacLeod and Staff.

This will represent an investigation, under the supervision of a member of the staff, of a problem in any of the major fields of psychological research. Candidates will for the most part work independently but may, from time to time, be called together for progress reports.

**496. SUPERVISED STUDY**

Either term. Credit two hours. Staff.

**497. SUPERVISED STUDY**

Either term. Credit four hours. Staff.

## Graduate Courses and Seminars

Primarily for graduate students, but with the consent of the instructor may be taken by qualified undergraduates. Approximately five graduate courses or seminars will be offered each term, the selection to be determined by the needs of the students. During the preregistration period, the list of courses and seminars for the following term will be posted, specifying instructors, topics to be covered, and hours of meeting.

**501-502. GENERAL SEMINAR FOR BEGINNING GRADUATE STUDENTS**

Either term. Credit three hours.

**511-512. PERCEPTION**

Either term. Credit four hours.

**513-514. LEARNING**

Either term. Credit four hours.

**515-516. MOTIVATION**

Either term. Credit four hours.

**517-518. LANGUAGE AND THINKING**

Either term. Credit four hours.

**521-522. PSYCHOBIOLOGY**

Either term. Credit four hours.

**523-524. PHYSIOLOGICAL PSYCHOLOGY**

Either term. Credit four hours.

**531-532. HISTORY OF PSYCHOLOGY**

Either term. Credit four hours.

**541-542. STATISTICAL METHODS**

Either term. Credit four hours.

## 242 ROMANCE STUDIES

### 543-544. PSYCHOLOGICAL TESTS

Either term. Credit four hours.

### 545-546. METHODS OF SOCIAL ANALYSIS

Either term. Credit four hours.

### 547-548. METHODS OF CHILD STUDY

Either term. Credit four hours.

### 561-562. HUMAN DEVELOPMENT AND BEHAVIOR

Either term. Credit four hours.

### 575-576. PERSONALITY

Either term. Credit four hours.

### 577-578. INDUSTRIAL PSYCHOLOGY

Either term. Credit four hours.

### 583-584. PROSEMINAR IN SOCIAL PSYCHOLOGY

(Also Sociology 583-584)

Either term. Credit four hours. Fall term: T 2:30-5:30. Mr. Rosen. Spring term: hours to be arranged. Mr. Jones.

Critical analysis of the major current theories and research in social psychology. In the fall, sociological perspectives will be emphasized; in the spring, psychological ones.

### 591-592. EDUCATIONAL PSYCHOLOGY

Either term. Credit four hours.

### 595-596. THE TEACHING OF PSYCHOLOGY

Either term. Credit four hours.

### 681-682. SEMINAR IN SOCIAL PSYCHOLOGY

(Also Sociology 681-682)

Either term. Credit four hours. Fall term: hours to be arranged. Mr. Meltzer. Spring term: hours to be arranged. Mr. Lambert.

Research oriented analysis of selected topics in social psychology.

### 683. RESEARCH PRACTICUM IN SOCIAL PSYCHOLOGY

(Also Sociology 683)

Fall term. Credit four hours. Hours to be arranged. Mr. Hayes.

Research on interaction and social structure.

## ROMANCE STUDIES

Mrs. Jean Parrish, Chairman; Messrs. C. Bandera-Gomez, J. S. Bernstein, G.-P. Biasin, D. Brenes, Miss Alice Colby, Messrs. P. de Man, J.-J. Demorest, H. Dieckmann, J. Freccero, D. I. Grossvogel, J. Kronik, E. P. Morris, K.-L. Selig, A. Seznec, and Staff.

The Department of Romance Studies offers courses in French language and literature, Italian language and literature, and Spanish language and literature. For complete course listing and for details of the major

programs in French, Italian and Spanish, see those language headings under *Modern Foreign Languages and Literatures*.

## RUSSIAN LITERATURE

Mr. G. Gibian, Chairman; Miss Patricia Carden, Miss Antonia Glasse, and Mr. M. Horwitz.

For complete course listings and for details of the major, see the heading "Russian" under *Modern Foreign Languages and Literatures*.

## SEMITIC LANGUAGES AND LITERATURES

Mr. I. Rabinowitz, Chairman; A. L. Ivry.

The Department of Semitic Languages and Literatures offers Cornell undergraduates, access to the thought and self-expression of the cultures which produced Judaism, Christianity, and Islam, and which today help to define and characterize the many millions of people in the group of countries that comprise the region we call the Middle East. Hebrew, Aramaic, and Arabic are not only the languages of the Old Testament and of the Koran, but of literatures of intrinsic merit and interest whose influence has permeated and enriched the literatures of many other civilizations, both East and West, ancient and modern, including our own. Studies pursued in this Department will, therefore, be found of lasting benefit and utility to all whose career interests involve the Middle East or Africa, and to all whose interest in religion and the humanities is more than merely casual.

Students who elect Semitics as their major study must complete 24 hours of advanced courses offered by the Department (courses numbered above 201, except as specified below) and 15 hours, approved by the Department, in related subjects. Related subjects may be selected by the student from course offerings in other departments of the College which are relevant to his intellectual interests or to his preparation for professional training or graduate study.

Students whose major study is in Semitics may emphasize either Hebrew or Arabic language and texts, provided that at least nine hours of course work be taken in the less-emphasized language; all courses in the less-emphasized language may be counted among the 24 needed to complete the major study.

Candidates for the degree of Bachelor of Arts with Honors in Semitics, in addition to fulfilling the requirements of the major study as outlined above, must complete successfully the special honors courses 370, 371, and 372. Part of the credit for honors courses may be included in the 24 hours required for the major study. Students who wish to become candidates for Honors and who have a cumulative average of B or better should consult their major advisers before pre-registering for the second term of the junior year.

The distribution requirement in humanities is satisfied in Semitic literatures by any two courses in Hebrew at the 200 level or higher, or by Arabic 207-208, provided the courses have not been used in fulfilling the language requirement.

Independent study may be arranged for students who have special interests or needs and are able to work in areas not covered by the courses.

## Hebrew and Aramaic

### 101-102. ELEMENTARY CLASSICAL HEBREW

Throughout the year. Credit three hours a term. The first term is prerequisite to the second term. M W F 11:15. Mr. Rabinowitz.

### 201. CLASSICAL HEBREW PROSE

Fall term. Credit three hours. Prerequisite, Hebrew 102 or consent of the instructor. M W F 2:30. Mr. Rabinowitz.

Selected prose narratives of the Hebrew Old Testament.

### 204. POSTBIBLICAL HEBREW PROSE (1)

Spring term. Credit three hours. Prerequisites, Hebrew 201, or 3 units of entrance Hebrew and the consent of the instructor. Hours to be arranged.

Rapid reading of narrative texts in rabbinic, medieval, and modern Hebrew.

### 302. CLASSICAL HEBREW POETRY

Spring term. Credit four hours. Prerequisite, Hebrew 201 or consent of the instructor. M W F 2:30. Mr. Rabinowitz.

Reading and interpretation of texts selected from the Psalter and the Prophets.

### 305. POSTBIBLICAL HEBREW PROSE (2)

Fall term. Credit four hours. Prerequisites, Hebrew 204, or four units of entrance Hebrew and consent of the instructor. Mr. Ivry.

Readings in the Mishnah, in medieval theological and philosophical texts, and in the modern essay.

### [306. POST-BIBLICAL HEBREW POETRY]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, Hebrew 305.

### 411. MISHNAH AND TOSEPHTA

Fall term. Credit four hours. Prerequisite, Hebrew 305 or consent of the instructor. Hours to be arranged.

Texts illustrative of the life and thought of Palestinian Jewry during the first two post-Christian centuries.

### [421. MIDRASH]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, Hebrew 305 or consent of the instructor.

## 423. TALMUD

Fall term. Credit four hours. Prerequisite, Hebrew 305 and Aramaic 452, or consent of the instructor. Hours to be arranged.

Texts selected from the Babylonian and Palestinian Talmuds, with emphasis on the characteristic *Gemārā* of each Talmud.

## [432. MEDIEVAL HEBREW LITERATURE]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, Hebrew 305 or consent of the instructor.

## [441. MODERN HEBREW LITERATURE]

Not offered in 1967-68.

Fall term. Credit four hours. Open to qualified undergraduate and graduate students.

## [451. ARAMAIC]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, Hebrew 201, Arabic 208, or consent of the instructor.

## [452. TALMUDIC ARAMAIC]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, Hebrew 305 or consent of the instructor.

## [471-472. SEMINAR]

Not offered in 1967-68.

Throughout the year. Credit four hours a term. For qualified undergraduate and graduate students.

## 401. INDEPENDENT STUDY

Either term. Credit two hours. For qualified students. Staff.

## 402. INDEPENDENT STUDY

Either term. Credit four hours. For qualified students. Staff.

## Arabic

## 105-106. ELEMENTARY LITERARY ARABIC

Throughout the year. Credit three hours a term. The first term is prerequisite to the second term. T Th 10:10, and a third hour to be arranged.

## 207-208. INTERMEDIATE LITERARY ARABIC

Throughout the year. Credit three hours a term. Prerequisite, Arabic 106 or consent of the instructor. T Th 11:15, and a third hour to be arranged. Mr. Ivry.

Rapid reading of selected texts in the main genres of Arabic literature.

## 317. ISLAMIC TEXTS IN ARABIC

Fall term. Credit four hours. Prerequisite, Arabic 208 or consent of the instructor. Hours to be arranged. Mr. Ivry.

Study of a number of *sūrah*s of the Koran and of *hadith*s selected from the *Sahih* of al-Bukhārī.

### 318. ARABIC GEOGRAPHERS AND HISTORIANS

Spring term. Credit four hours. Prerequisite, Arabic 208 or consent of the instructor. Hours to be arranged. Mr. Ivry.

Reading of texts drawn from the works of several of the best writers in each genre.

### [461. ARABIC PHILOSOPHERS]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, Arabic 317 or 318, or consent of the instructor.

### [462. MEDIEVAL ARABIC BELLES LETTERS ('ADAB)]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, Arabic 317 or 318, or consent of the instructor.

### [481. MODERN ARABIC LITERATURE]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, Arabic 318, or consent of the instructor.

### [482. ARABIC POETRY]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, Arabic 318, 462, or consent of the instructor.

### [491-492. SEMINAR]

Not offered in 1967-68.

Throughout the year. Credit four hours a term. Open to qualified undergraduate and graduate students.

### 405. INDEPENDENT STUDY

Either term. Credit two hours. For qualified students. Staff.

### 406. INDEPENDENT STUDY

Either term. Credit four hours. For qualified students. Staff.

## Honors Courses

### 370. HONORS COURSE

Spring term. Credit four hours. To be taken in the junior year.

A program of readings and consultations devoted to an author or topic to be made known in advance of the term.

### [371-372. SENIOR HONORS COURSE]

Not offered in 1967-68.

Throughout the year. Credit four hours a term. The first term is prerequisite to the second term.



## Other Courses

THE LITERATURE OF THE OLD TESTAMENT  
(Comparative Literature 301)

THE LITERATURE OF POST-EXILIC ISRAEL  
(Comparative Literature 302)

## SOCIOLOGY

Mr. J. M. Stycos, Chairman; Mr. C. Ackerman, Mrs. Rose K. Goldsen, Messrs. D. P. Hayes, N. Henry, R. Jung, W. W. Lambert, P. G. Marden, R. McGinnis, L. Meltzer, G. C. Myers, B. C. Rosen, G. F. Streib, N. Tavuchis, W. E. Thompson, R. M. Williams, Jr.

There are three alternative majors available: (1) sociology, (2) sociology with a concentration in social psychology, (3) social relations. A student planning to major in one of these should ordinarily complete the Distribution requirements by the end of the sophomore year.

**SOCIOLOGY MAJOR.** For a major in sociology the following courses must be completed: (a) 321, 330, 402, and 441; (b) a course in social psychology at the 300 level or higher; (c) 12 hours of electives at the 300 level or higher, including at least one course at the 400 level; four hours of these electives must be in sociology. Departmentally approved courses in other fields may be elected in consultation with the major adviser.

As a prerequisite for a major in sociology, students should normally offer Sociology 101 and an additional 200-level course. In addition, the student must offer an approved course in statistics to be taken not later than the end of the junior year but preferably as a sophomore. For admission to the major a student must have an average of at least C in the prerequisite departmental courses and must be accepted by the departmental admissions committee. Ordinarily, students should apply for admission to the major no later than two weeks before the time of preregistration in the spring term.

Students planning to major in Sociology are urged to take a year of college mathematics.

**SOCIOLOGY WITH A CONCENTRATION IN SOCIAL PSYCHOLOGY.** In cooperation with the Department of Psychology, a concentration in social psychology is available. Sociology majors who wish to specialize in social psychology must meet the prerequisites for a major in sociology and take the following courses:

- (a) Three courses in sociology: Sociology 330, 402, and 441.
- (b) One course in experimental psychology: Psychology 201, 305, 306, or 307.
- (c) One survey course in social psychology: Sociology 381, 383, 386, or 388.

(d) One course in experimental social psychology: Sociology 481, 482, or 683.

(e) One course in social methodology: Sociology 321 or Psychology 412.

(f) One independent project or one seminar in social psychology: Sociology 488, 583, 584, 681, 682, 691, 692, or Psychology 496 or 497.

**SOCIAL RELATIONS MAJOR.** The major in social relations is offered jointly by the Department of Anthropology and the Department of Sociology. The major provides the student with basic competence in cultural anthropology, social psychology, and sociology, while giving particular emphasis to the common methods of research in these disciplines. The student electing this major is expected to obtain a grasp of the common interests and evidence of these disciplines as well as knowledge of their unique insights in attempting to develop generalizations regarding man in society. The student's work is integrated in his senior year when he takes the social relations seminar in which he is expected to interrelate aspects of the theory and data of the three disciplines.

1. Prerequisites to the major: The candidate must apply to the Committee on Admission to the Social Relations Major, offering the following:

a. Either Anthropology 101 or Sociology 101.

b. Either Psychology 101 or Child Development 115 or Sociology 281.

c. Either Industrial and Labor Relations 210 or equivalent.

2. The major: The major calls for a minimum of 36 hours of course work as follows:

a. Three pairs or other combinations of related courses at the 300 level or above, to be selected in consultation with the major adviser. These six courses must include two courses from each of the following disciplines: anthropology, social psychology, sociology.

b. At least one course in methods, to be selected from the following: anthropological methods, techniques of experimentation (psychology), methods in sociology, advanced psychological statistics, the philosophy of science or of social science, advanced statistics (such as Industrial and Labor Relations 311).

c. At least one course in theory which is related to social relations.

d. The senior seminar in social relations (Sociology 497, or Anthropology 495).

A list of the courses which may be used to satisfy the requirements for a major in social relations is available from any of the major advisers.

Students seeking admission to the program in social relations should apply to the Chairman of the Social Relations Committee, Robin M. Williams, Jr.

**SEMINARS.** Seminars may be taken by qualified undergraduates with the consent of the instructor, except as otherwise noted in course listings.

**THE HONORS PROGRAM.** For admission to the Honors program, students should file application on a form obtainable in the departmental office not later than November 1 of their junior year. Honors candidates must have a general average of at least B- and an average in departmental courses of at least B, or show exceptional promise.

**DISTRIBUTION REQUIREMENTS.** The Distribution requirements in social sciences is satisfied in sociology by Sociology 101 and an additional semester course at the 200 or 300 level.

**PARTICIPATION IN RESEARCH.** Participation in sociological research may be required as part of course work for any student when the instructor considers that it will be to the student's educational advantage.

#### 101. MAN AND SOCIETY

Either term. Credit three hours. M W F 12:20. Mr. Ackerman and staff.

The history and main variables of sociology will be covered in lectures. In midsemester, students will meet in small groups, led by senior researchers of the department, in which contemporary research will be discussed.

#### 202. UNDERGRADUATE SEMINAR IN SOCIOLOGY

Spring term. Credit three hours. Prerequisites, Sociology 101 and consent of the instructor. T Th (S) 10:10. Mr. Hayes.

Stresses active student participation in the classroom and in laboratory and field research. Readings in the original sources will emphasize major contemporary issues.

#### [204. GENERAL INTRODUCTION TO BEHAVIORAL SCIENCE]

Not offered in 1967-68.

Spring term. Credit three hours.

#### 262. PUBLIC OPINION

Spring term. Credit three hours. M W F 11:15. Mrs. Goldsen.

Factors determining the character of public opinion on the basis of relevant social, psychological, and political science knowledge. The nature, development, and control of public opinion in terms of opinion formation and change and the relation of public opinion to social and political action. The role of the communication media of radio, television, press, and motion pictures in determining public opinion. Students will be asked to participate in a field study examining opinion on a current issue of public interest.

#### 264. INTERGROUP RELATIONS: PREJUDICE, DISCRIMINATION, AND CONFLICT

Spring term. Credit three hours. Prerequisite, Sociology 101 or consent of the instructor. T Th S 11:15. Mr. Williams.

An evaluation of relations among ethnic, racial, and religious groups in terms of the social psychology of intergroup hostility and conflict and the position and role of these groups in the larger community. Prejudice and discrimination will be analyzed for their social, psychological, political, and economic causes and effects. Social and political movements based on intolerance and efforts to resolve intergroup conflict will be examined, with special attention to current developments resulting from the desegregation of public schools.

### 281. INTERPERSONAL RELATIONS AND SMALL GROUPS

(Also Psychology 281)

Fall term. Credit three hours. Prerequisite, Sociology 101, or Child Development 115. M W F 11:15.

The presentation and development of selected theories offered to account for why people relate to one another the way they do and the social structures which emerge from and condition these relationships. Emphasis will be upon social psychological processes in small groups, such as athletic teams, committees, fraternities, engaged couples, etc. These perspectives are compared and evaluated.

### 284. INTRODUCTION TO PERSONALITY AND SOCIAL PSYCHOLOGY

(Also Psychology 284)

Spring term. Credit four hours. Prerequisite, a course in psychology. T Th 10:10 and one hour discussion section to be arranged. Mr. Meltzer and Staff.

The approaches of several theories—psychoanalytic, cognitive, and behavioral—are evaluated in relation to selected topics such as motivation, traits, attitudes, conformity, prejudice, and group behavior. Students will read extensively in modern and classic attempts to explicate the human condition. Lectures will evaluate these perspectives in terms of recent research.

### 321. TECHNIQUES OF SOCIOLOGICAL RESEARCH

Fall term. Credit four hours. Prerequisites, Sociology 101 and a course in statistics, or consent of the instructor. M W F 11:15. Mr. Henry.

Strategies in the framing and testing of sociological hypotheses are considered. Data sources and test procedures are evaluated. Data-gathering techniques are studied and applied in a practicum.

### 330. POPULATION PROBLEMS

Spring term. Credit four hours. M W 12:20, and one hour to be arranged. Mr. Stycos.

The practical and scientific significance of population growth and composition. Fertility, migration, and mortality in relation to social and cultural factors and in relation to questions of population policy. National and international data will receive approximately equal emphasis.

### 332. URBAN COMMUNITIES

Spring term. Credit four hours. Prerequisite, Sociology 101 or consent of the instructor. T Th S 11:15. Mr. Thompson.

The study of urban aggregates as ecological, social, and cultural systems. The structure of urban communities will be studied both from the perspective of the larger, enviroing social and cultural system and from the perspective of internal relationships of institutions within the community. Patterns of community power structure and political participation will be examined within this context.

### 341. SOCIOLOGY OF EDUCATION

Fall term. Credit four hours. Prerequisite, Sociology 101 or consent of the instructor. T Th S 11:15. Mr. Thompson.

An examination of educational institutions in the context of contemporary social and cultural developments. The structure of educational institutions, both American and foreign, and the interrelationships between educational and other institutions will be studied.

**343. THE FAMILY**

Fall term. Credit four hours. Prerequisite, Sociology 101 or consent of the instructor. M W F 10:10. Mr. Tavuchis.

The structure and function of the nuclear family, extended family, and corporate kinship groups in the West and cross-culturally. Specific areas which will be examined include biological foundations, mate selection, illegitimacy, sexual controls, internal familial processes, disorganization, the family and stratification, changes in family systems.

**346. SOCIAL STRATIFICATION**

Spring term. Credit four hours. Prerequisite, Sociology 101 or consent of the instructor. M W F 3:35-4:25. Mr. Tavuchis.

An overview of various theories and empirical investigations of social stratification considered historically and cross-culturally.

**347. BUREAUCRACY IN MODERN SOCIETY**

Fall term. Credit four hours. Prerequisite, Sociology 101 or consent of the instructor. T Th S 10:10.

Study of the nature, conditions for growth, and consequences of bureaucratic organizations in modern Western societies, especially the United States. Structure and operation of organizations having diverse functions in modern society, such as business corporations, trade unions, the military, political-interest groups and parties, hospitals, and government agencies. Implications of bureaucracy for effective organizational functioning, for the organizational members, their families, the communities in which they live, and, especially, for conflicts in values within the individualistic, democratic, and humane traditions of American society.

**348. POLITICAL SOCIOLOGY**

Spring term. Credit four hours. Prerequisite, Sociology 101 or consent of the instructor. M W F 10:10.

An examination of political institutions as sociological phenomena with emphasis on the empirical study of political behavior. Cultural and social factors associated with political structure, political attitudes, and political behavior. Political decision making as a sociological process.

**350. COMPARATIVE SOCIAL STRUCTURE**

Spring term. Credit four hours. Prerequisite, Sociology 101. M W F 11:15. Mr. Rosen.

An analysis of the constant and variable features of large-scale industrial and pre-industrial societies. The universality of sociological propositions, originally tested with American data, in the light of data from other societies.

**351. SOCIOLOGY OF DEVIANCE**

Fall term. Credit four hours. Prerequisite, Sociology 101. M W F 9:05. Mr. Ackerman.

Sociological aspects of aberrant youth culture, lower-class gangs, mental illness, and political extremism are examined in the context of "action" theory, with special attention given to "anomie," "alienation," and "identity crisis."

**354. RELIGION IN WESTERN SOCIETY**

Spring term. Credit four hours. Prerequisite, Sociology 101 or consent of the instructor. M W F 9:05. Mr. Streib.

The interrelationship of culture, society, and religion. Religion and social stratification, religion and economic and political institutions, social change and religion. The major emphasis will be upon American society and American religious institutions.

[362. ECONOMIC DEVELOPMENT AND SOCIAL EVOLUTION]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, Sociology 101. Mr. Ackerman.

381. SOCIAL PSYCHOLOGY

(Also Psychology 381)

Either term. Credit four hours. Prerequisites, 3 hours of psychology and 3 hours of sociology. M W F 10:10 Fall term: Mr. Lambert.

Analysis of the history, concepts, methods, and theories used to describe and conceptualize the ways in which people react to one another in social settings and in the laboratory. Students will work individually or as teams on projects, using experimental or other empirical methods. The topics for investigation in lectures and reading will include socialization, attitude change, communication, interpersonal influence, impression formation, leadership, and propaganda.

383. GROUP DYNAMICS

(Also Psychology 383)

Fall term. Credit four hours. Prerequisites, written consent of the instructor and 3 hours in psychology and 3 hours in sociology. M W F 11:15. Mr. Hayes.

An analysis of group structures and processes. An essential feature is training in observational methods and techniques of group analysis. Substantial laboratory and field study is required. Original readings are coordinated with the training, research, and lectures.

386. THEORIES OF PERSONALITY

(Also Psychology 386)

Spring term. Credit four hours. Prerequisite, Psychology 101 or consent of the instructor. M W F 12:20. Mr. Lambert.

A critical survey of the concept of personality in literature, the social sciences, and psychology. A number of the modern specialists will be discussed at some length, and recent empirical and experimental work that has grown out of their thought will be analyzed. The empirical relation of personality notions to some philosophical beliefs and literary productions will be considered. The emphasis will be mainly upon "normal" personality.

388. ATTITUDES AND ATTITUDE CHANGE

(Also Psychology 388)

Spring term. Credit four hours. Prerequisites, 3 hours of psychology and 3 hours of sociology. M W F 9:05. Mr. Meltzer.

A systematic survey of theory and research on attitudes and attitude change.

402. SOCIAL THEORY

Spring term. Credit four hours. Prerequisite, consent of the instructor. M 1:25-3:20 and one hour to be arranged. Open only to graduate students and to undergraduate majors in the social sciences.

Survey of selected theories and concepts in contemporary sociology reviewed in historical perspective, in relation to the contributions of other social sciences, and in terms of present-day developments in theory and re-

search. Throughout, emphasis will be placed on trends in contemporary social theory.

#### 420. MATHEMATICAL SOCIOLOGY

Spring term. Credit four hours. Prerequisites, Sociology 101 and one year of college mathematics, or consent of the instructor. Th 1:25-3:20 and one additional hour. Mr. McGinnis.

Elementary mathematics as applied to sociological theory. Both deterministic and probabilistic models are considered. Stochastic probability processes are emphasized in relation to theories of social change.

#### 422. STUDIES IN SOCIOLOGY

Spring term. Credit four hours. W 1:25-3:20 and one additional hour. Mr. Henry.

Emphasis is placed on the methodological assumptions of social measurement and analysis. Latent structure models are considered in detail.

#### [423. ANALYSIS OF QUANTITATIVE DATA]

Not offered in 1967-68.

Fall term. Credit four hours. Open to junior and senior majors and graduate students with the consent of the instructor. Laboratory period to be arranged. Mrs. Goldsen.

#### [424. ANALYSIS OF QUALITATIVE DATA]

Not offered in 1967-68.

Spring term. Credit four hours. Open to junior and senior majors and graduate students with the consent of the instructor. Laboratory period to be arranged. Mrs. Goldsen.

#### 433. INTERNATIONAL URBANIZATION

Fall term. Credit four hours. Prerequisite, consent of the instructor. M W F 9:05. Mr. Marden.

An examination and appraisal of the growth and development of urban communities in developing nations. The structure and composition of such communities and their relationship to a regional economy are compared with similar phenomena in the Western world.

#### [434. SOCIOLOGY OF HUMAN FERTILITY]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, Sociology 330 or consent of the instructor. Mr. Stycos.

#### 435. MORTALITY AND MORBIDITY

Fall term. Credit four hours. Prerequisite, Sociology 330 or consent of the instructor. M 1:25-3:20 and one hour to be arranged. Mr. Marden.

The determinants and consequences of these demographic forces will be considered with special attention being paid to trends and differentials. The role of mortality in the "demographic transition" of both developed and underdeveloped areas will be examined. The demographic, sociological, and epidemiological approaches will be applied to selected problems involving mortality, illness, health, and medical care. Special attention is directed to the social determinants and consequences of fertility, mortality, and migration.

#### 438. HUMAN MIGRATION

Spring term. Credit four hours. Prerequisite, Sociology 330 or consent of the instructor. T Th S 11:15. Mr. Myers.

An analysis of international and internal migration as it affects the social and economic structure of societies and the groups in movement. The major theoretical and methodological investigations will be examined from such varied perspectives as individual motivation and mathematical models of migration.

### INTRODUCTION TO HUMAN ECOLOGY

(Planning 713. Arch.)

Spring term. Credit three hours. Mr. Feldt.

An examination of the form and development of the human community with respect to spatial, temporal, and functional patterns of organization. Demographic, environmental, and technological characteristics are treated as parameters relevant to the ecological structure of the community.

### 441. STRUCTURE AND FUNCTIONING OF AMERICAN SOCIETY—I

Fall term. Credit four hours. Prerequisite, Sociology 101 or consent of the instructor. T Th S 9:05. Mr. Williams.

Systematic analysis of the major institutions of kinship, stratification, economic activity, political structure, education, and religion. Special attention is given to values and their interrelations in the modern social order. A survey of the more important types of groups and associations making up a pluralistic nation is included.

### 442. STRUCTURE AND FUNCTIONING OF AMERICAN SOCIETY—II

Spring term. Credit four hours. Prerequisite, Sociology 441 or consent of the instructor. T Th S 9:05. Mr. Williams.

Primary attention is directed to the study of interrelations of institutions, including analysis of the regulation of economic and political systems. Group co-operation and conflict are surveyed. Analysis of important processes of change in institutions, values, and social organizations.

### 481. EXPERIMENTAL SOCIAL PSYCHOLOGY

(Also Psychology 481)

Fall term. Credit four hours. Prerequisites, 3 hours of psychology and 3 hours of sociology or anthropology. M W F 2:30-3:20. Mr. Jones.

Emphasis is on the empirical study of social psychological phenomena. Students will be introduced to empirical laboratory and field methods used in social psychology. Substantive problems will provide the focus for the demonstration and use of these techniques.

### 482. LABORATORY IN GROUP DYNAMICS

(Also Psychology 482)

Spring term. Credit four hours. Prerequisites, a course in statistics and a course in social or experimental psychology. W 1:25-3:20 and laboratory time to be arranged.

A practicum. Supervised research experience in the design, execution, and analysis of experimental research on topics such as group cohesiveness, group pressure, group goals, leadership, group performance, and interpersonal influence and communication. Students will read and discuss experimental studies as well as pertinent theoretical articles.

### 488. INDIVIDUAL AND SOCIETY IN THE SOVIET UNION

(Also Psychology 488)

Spring term. Credit four hours. Prerequisite, consent of the instructor. Hours to be arranged. Will be conducted as a seminar. Mr. Bronfenbrenner.



491. SELECTED TOPICS IN SOCIOLOGY

Either term. Credit two hours. Open only to majors. Hours to be arranged. Staff.

492. SELECTED TOPICS IN SOCIOLOGY

Either term. Credit four hours. Open only to majors. Hours to be arranged. Staff.

494. HONORS SEMINAR: JUNIOR YEAR

Spring term. Credit four hours. Prerequisite, acceptance as candidate for Honors. Hours to be arranged. Staff.

495. HONORS RESEARCH: SENIOR YEAR

Fall term. Credit four hours. Prerequisite, Sociology 494. Hours to be arranged. Staff.

496. HONORS THESIS: SENIOR YEAR

Spring term. Credit four hours. Prerequisite, Sociology 495. Hours to be arranged. Staff.

497. SOCIAL RELATIONS SEMINAR

(Also Anthropology 495)

Fall term. Credit four hours. Open only to seniors majoring in social relations. Hours to be arranged.

[511. THEORY OF CULTURE AND SOCIAL ORGANIZATION]

Not offered in 1967-68.

Fall term. Credit four hours. Prerequisite, Sociology 402 or equivalent. Mr. Williams.

512. HISTORY OF SOCIOLOGICAL THEORY

Spring term. Credit four hours. Open to majors and graduate students. Th 1:25-3:20 and one hour to be arranged.

522. SURVEY OF SOCIOLOGICAL METHODS

Spring term. Credit four hours. Prerequisites, Sociology 321 and a statistics course or consent of the instructor. F 1:25-3:20 and M 2:30-3:20. Mrs. Goldsen and staff.

A survey of contemporary social science research techniques that emphasize interdisciplinary methodological convergences. Investigators from several disciplines report on research problems that are encountered and techniques that are used to cope with them.

523. FOUNDATIONS OF STATISTICAL ANALYSIS

Fall term. Credit four hours. Prerequisite, Sociology 522 or consent of the instructor. W 3:35-5:30 and one hour to be arranged. Mr. McGinnis.

The logic of social research; sets and relations; measurement; probability models.

524. RESEARCH DESIGN AND STATISTICAL INFERENCE

Spring term. Credit four hours. Prerequisite, Sociology 523 or consent of the instructor. Hours to be arranged. Mr. Henry.

The logic of statistical inference; problems of multivariate analysis; the design of experiment; latent structure and factor analysis.

526. STOCHASTIC PROCESSES IN SOCIOLOGY

Spring term. Credit four hours. Prerequisites, one year of college mathematics and one term of statistics, or consent of the instructor. W 3:35-5:30 and one hour to be arranged. Mr. McGinnis.

Finite probability theory is reviewed. Recurrent events, stationary Markov chains, and dynamic Markov processes are evaluated as models of social organization and change.

[528. SOCIOLOGICAL APPLICATION OF GAME AND DECISION THEORY]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisites, one year of college mathematics and one term of statistics, or consent of instructor. Mr. McGinnis.

530. INTRODUCTION TO DEMOGRAPHY

Spring term. Credit four hours. Prerequisites, graduate student status or consent of the instructor. M W F 10:10. Mr. Marden.

A survey of the methods, theories, and problems of contemporary demography.

531. DEMOGRAPHIC THEORY

Fall term. Credit four hours. Open to majors and graduate students. T 1:25-3:20. Mr. Myers.

Deals with theory construction, hypothesis derivation, and the integration of theory and research in demography. Although emphasis is placed on contemporary theories, earlier formulations beginning with Malthus also are examined insofar as they deal with fertility, mortality, migration, and the people-resource question.

535. TECHNIQUES OF DEMOGRAPHIC ANALYSIS

Fall term. Credit four hours. Prerequisite, Sociology 330 or consent of the instructor. T Th S 11:15. Mr. Myers.

Methods of processing and analyzing demographic data. Measures of mortality, fertility, and migration as applied to census and vital statistics data will be analyzed, and the more general applications of demographic techniques to other classes of data illustrated.

[536. DEMOGRAPHIC RESEARCH METHODS]

Not offered in 1967-68.

Spring term. Credit four hours. Prerequisite, Sociology 330 or consent of the instructor. M W F 11:15.

541. SOCIAL ORGANIZATION AND CHANGE

Fall term. Credit four hours. T Th 1:25-3:20. Mr. Williams.

An analysis of major problems in theory and research in the general field of social organization and change. The subject will be studied from the standpoint of the nature and size of the social system (small groups, communities, large-scale organizations, societies) and also in terms of the social processes and properties of the system, such as integration, authority, conformity, and deviance.

583-584. PROSEMINAR IN SOCIAL PSYCHOLOGY

(Also Psychology 583-584)

Either term. Credit four hours. Fall term: T 2:30-5:30. Mr. Rosen. Spring term: hours to be arranged. Mr. Jones.

Critical analysis of the major current theories and research in social psychology. In the fall, sociological perspectives will be emphasized; in the spring, psychological ones.

**632. SEMINAR: CONTEMPORARY RESEARCH IN DEMOGRAPHY**

Spring term. Credit four hours. T 3:35-5:30. Mr. Stycos.

Critical analysis of recent research investigations in Latin American demography.

**641. SEMINAR: THEORY AND RESEARCH ON THE SOCIOLOGY OF EDUCATION**

Fall term. Credit four hours. Hours to be arranged. Mr. Thompson.

Critical examination of topics in the sociology of education.

**643. SEMINAR: THEORY AND RESEARCH**

Fall term. Credit four hours.

**644. SEMINAR: THEORY AND RESEARCH ON THE FAMILY**

Spring term. Credit four hours. Hours to be arranged. Mr. Tavuchis.

Selected problems in the sociology of the family: e.g., ethnic family patterns; family and mobility; family and change; the relation between family and other institutions.

**654. SEMINAR: THEORY AND RESEARCH ON THE SOCIOLOGY OF RELIGION**

Spring term. Credit four hours. W 3:35-5:30. Mr. Streib.

**657. SEMINAR: SOCIAL STRUCTURE AND SOCIAL CHANGE**

Fall term. Credit four hours. Hours to be arranged. Mr. Rosen.

**662. SEMINAR: SOCIAL SYSTEMS ANALYSIS**

Spring term. Credit four hours. M 1:25-4:25. Mr. Jung.

Foundations of systems analysis.

**663. SEMINAR: SOCIAL SYSTEMS ANALYSIS**

Fall term. Credit four hours. M 1:25-4:25. Mr. Jung.

Foundations of social systems analysis.

**681-682. SEMINAR IN SOCIAL PSYCHOLOGY**

(Also Psychology 681-682)

Either term. Credit four hours. Fall term: hours to be arranged. Mr. Meltzer.

Spring term: hours to be arranged. Mr. Lambert.

Research oriented analysis of selected topics in social psychology.

**683. RESEARCH PRACTICUM IN SOCIAL PSYCHOLOGY**

(Also Psychology 683)

Fall term. Credit four hours. Hours to be arranged. Mr. Hayes.

Research on interaction and social structure.

**691-692. DIRECTED RESEARCH**

Either term. Credit to be arranged. Hours to be arranged. Staff.

## THEATRE ARTS

Mr. M. A. Carlson, Chairman; Messrs. H. D. Albright, G. Beck, V. M. Bevilacqua, J. Clancy, Miss Anne Gibson, Mr. L. A. Goff, Miss Peggy Lawler, Messrs. R. Robertson, B. O. States, Jr., and Staff.

The Department of Theatre Arts offers a broad and varied curriculum dealing with theatre and related arts. All majors must complete the sequence 109-110 plus 285 and 27 additional hours of work in the Department, and at least twelve hours of approved work in dramatic literature, history of art, sociology, anthropology, or psychology.

Students wishing to graduate with Honors should make application to the Chairman at the beginning of their junior year. For provisional acceptance as a candidate for Honors, a student must have chosen theatre as his major, have a cumulative average of B- for all work done in the college, and have no grades below B- for courses in the Department.

The Distribution requirement in the expressive arts is satisfied only by the sequences 109-110 or 283-285. Representative upper-level sequences are: 283-386, 285-385, 375-376, 381-382, 393-394.

Opportunities for performance in theatre, dance, and cinematography are available to all members of the student body through the facilities of the Department. A wide variety of theatrical performances is presented each term in the University Theatre of Willard Straight Hall and the Drummond Studio of Lincoln Hall. Student may participate as actors, dancers, directors, playwrights, designers, or technicians. General auditions are held at the beginning of each term, with additional auditions for particular productions scheduled through the year. Film-making equipment and facilities are available for student use.

### 109-110. INTRODUCTION TO THEATRE ART

Throughout the year. Credit three hours a term. First term prerequisite to the second. M W F 11:15. Mr. Albright.

Study of the fundamental elements in theatrical production and of their interrelationships. The first term will be devoted primarily to the written script and its analysis for production, and to staging and design as they affect the work of actor and director.

In the second term the artistic choices of the actor and director in bringing a script to life on the stage will be given primary consideration. Material in both terms will be developed through lectures, readings, discussions, and demonstrations, as well as through individual and group exercises.

Intended primarily for students in the College of Arts and Sciences. Not open to students who have taken Speech and Drama (Theatre Arts) 283.

### 125. FRESHMAN SEMINAR IN THE PUBLIC ARTS

Spring term. Credit three hours. Mr. Beck.

For description see Freshman Humanities Program, page 27.

### 300. INDEPENDENT STUDY

Either term. Credit four hours. Individual study of special topics Open to juniors and seniors by consent of the Departmental member directing the study.

## Speech

**PRIZES.** The Department calls attention to three prizes in public speaking, competition for which will be open in the spring term: The Woodford Prize for seniors; the Class of 1894 Memorial Prize in Debate for juniors and seniors; the Class of 1886 Memorial Prize in Public Speaking for sophomores and juniors.

### 202. PERSUASION

Fall term. Credit three hours. Prerequisite, Speech and Drama 107 or 201. M W F 9:05. Mr. Bevilacqua.

Advanced study of the speech designed to affect attitudes and beliefs and to induce action. Study of the theories of persuasion with special attention to the logic, language, and structure of audience-centered persuasive discourse. Practice in the composition and delivery of persuasive speeches related to varied purposes, audiences, and propositions.

### 412. BRITISH PUBLIC ADDRESS

Spring term. Credit four hours. M W F 12:20. Mr. Bevilacqua.

Analytic study of parliamentary and public speeches reflecting the evolution of British rhetorical practice. Speeches to be studied will relate to such movements as the American and French revolutions, Indian reform, parliamentary reform, free trade, imperialism, and World War II. Representative of the orators considered are Cromwell, Chatham, Burke, Cobden, Gladstone, and Churchill.

### 501-502. SEMINAR IN RHETORICAL THEORY

Throughout the year. Credit four hours a term. M 2-4:25. Mr. Bevilacqua.

In the first term consideration will be given to theories of rhetorical practice; in the second term, to applications of rhetorical theory in the criticism of public address.

## Drama

**PRIZES:** Four prizes are offered under the auspices of the Department: the Heermans Prize of One-Act Plays on an American Theme (open to undergraduates), the George A. McCalmon Prize for One-Act Plays (open to graduates and undergraduates with no restriction as to theme), the Cornell Dramatic Club First President's Prize for significant contributions to the theatre program, and the Cornell Student Film Festival Prize (open to graduates and undergraduates with no restriction as to length or theme).

The Drummond Awards were established in honor of the late Professor A. M. Drummond, to acknowledge, each year, outstanding achievements by undergraduate members of the Cornell Dramatic Club and other undergraduate participants in the University Theatre program.

## THEATRE PRODUCTION

Each of the following three courses (261-262, 263-264, and 265-266) is offered throughout the year. Credit one hour a term. Consent of the instructor is required. The courses may be repeated for credit, but no student may earn more than six hours of credit applicable towards graduation. Acting, direct-

## 260 THEATRE ARTS

ing, managerial, and technical responsibilities in productions of the University Theatre and/or Studio programs under the direction of the University Theatre staff. Participation is also open to students without credit.

### 261-262. REHEARSAL AND PERFORMANCE

Hours to be arranged. First meeting in Lincoln B-9 at 7:30 p.m. on first day of instruction. Mr. Robertson.

### 263-264. MANAGEMENT AND DIRECTION

Hours to be arranged. First meeting in Lincoln B-9 at 7:30 p.m. on first day of instruction. Mr. Albright.

### 265-266. TECHNICAL THEATRE

Hours to be arranged. First meeting in Lincoln B-9 at 7:30 p.m. on first day of instruction. Miss Gibson.

## 281. ORAL INTERPRETATION OF LITERATURE

Spring term. Credit three hours. Not open to freshmen. M W F 9:05. Staff.

An introductory course intended to help the student communicate accurately and expressively in reading aloud. Study of principles and criteria of good reading; analysis and delivery of selected materials from prose and poetry; conferences; drill.

## 283. ACTING

Fall term. Credit three hours. Not open to students who have taken Speech and Drama (Theatre Arts) 110. T Th 11:15. Laboratory, M 2:30-4:25. Mr. Robertson.

An introductory course in acting; analysis and performance of varied types of dramatic prose and poetry; study of speech and action as adapted to the stage with special attention to problems of characterization; reports, individual exercises, and group rehearsal.

## 284. DANCE AND MOVEMENT FOR THE THEATRE

Either term. Credit three hours. F 1:30-3:00 plus one other period to be arranged. Miss Lawler.

Basic dance technique designed to help the actor improve his use of the body as an expressive instrument. Emphasis in the second term is on changing styles of movement.

## MODERN DANCE

(See Physical Education 200-204)

## 285. PLAY PRODUCTION

Fall term. Credit three hours. Not open to freshmen. T Th 10:10. Laboratory M 2:30-4:25. Staff.

Principles and methods of dramatic production, with special attention to directoral controls. Fundamentals of theatrical mounting; survey of practical phases of production. Required of majors in drama; recommended to others as basic to all 300 and 400 courses in dramatic production.

## 381. STAGECRAFT

Fall term. Credit four hours. No prerequisite but previous study of acting or play production recommended. M W 12:20. Laboratory, T 2:00-4:25. Miss Gibson.

The theory and practice of stage production and design; theatre structure and equipment, problems and practice in scene construction and painting, elements of lighting. Lectures, demonstrations, research reports.

### 382. STAGE LIGHTING AND DESIGN

Spring term. Credit four hours. Prerequisite, Speech and Drama (Theatre Arts) 381 or consent of instructor. M W 12:20. Laboratory T 2:00-4:25. Miss Gibson.

A consideration of the history, theory, and practice of lighting and design in the pictorial elements of dramatic production. Lectures, demonstrations, and special projects.

### 383-384. THEATRE PRACTICE

Throughout the year; may be entered either term. Credit two hours a term. Primarily for majors in drama but open, by consent of instructor, to other students. Hours to be arranged. First meeting in Lincoln B-9 at 8:30 p.m. on first day of instruction. Miss Gibson and the staff of the University Theatre.

Planning and execution of projects in the productions of the University Theatre.

### 385. ADVANCED DIRECTING

Spring term. Credit four hours. Prerequisite, Speech and Drama (Theatre Arts) 285 or consent of instructor. W 2:00-4:25. Mr. Clancy.

Readings, reports, and exercises; assignments in the direction and production of plays in the Studio program.

### 386. ADVANCED ACTING

Spring term. Credit four hours. Prerequisite, Speech and Drama (Theatre Arts) 285 or consent of instructor. M 2:00-4:25. Mr. Goff.

Exercises and projects in the development of stage speech and action.

### 388. PLAYWRITING

Fall term. Credit four hours. Previous study in play production recommended. W 2:00-4:25. Mr. States.

A consideration of the art and craft of writing for the theatre; practice through the composition and testing of one-act plays. Part of the term will be devoted to a group project involving all the class.

## THEATRE HISTORY, LITERATURE, AND THEORY

### 271. THE ARTS OF THE THEATRE

Fall term. Credit three hours. Not open to freshmen or to students who have taken Speech and Drama (Theatre Arts) 109. M W F 9:05. Mr. Albright.

A survey of the elements of dramatic communication intended to develop appreciation and rational enjoyment of the theatre in all its forms. This is not a production course, and no experience in dramatic production is required. Lectures, readings, demonstrations.

### 273. THE PUBLIC ARTS

Spring term. Credit three hours. Not open to students who have taken Speech and Drama (Theatre Arts) 125. T Th S 10:10. Mr. Robertson.

A study of the three principal theatre-related arts—film, radio, and television: their origins; their history; their methods of entertainment and instruction; their position in American culture.

[373. SURVEY OF THEATRICAL THEORY]

Not offered in 1967-68.

393. HISTORY OF THE THEATRE I

Fall term. Credit four hours. M W F 10:10. Mr. Beck.

A survey of the characteristics of primitive theatre, and of theatrical styles and production modes in Classical Greece, Rome, China, India, Medieval Europe, Renaissance England, and Spain. Readings, lectures, and reports.

394. HISTORY OF THE THEATRE II

Spring term. Credit four hours. M W F 10:10. Mr. Carlson.

A survey of theatrical styles and production modes in Europe and the Orient since 1642. Among the areas considered will be Renaissance France, the English Restoration, the eighteenth and nineteenth centuries in England, France, Germany, and Japan, and the modern international stage. Readings, lectures, and reports.

WORLD DRAMA

(See Comparative Literature 345-346)

GREEK AND ROMAN DRAMA

(See Comparative Literature 404)

REPRESENTATIVE ENGLISH DRAMAS

(See English 339)

ELIZABETHAN AND JACOBEAN DRAMA

(See English 412)

SHAKESPEARE

(See English 368 and 413)

396. AMERICAN DRAMA AND THEATRE

Spring term. Credit four hours. T Th S 11:15. Mr. Robertson.

A study of the American theatre and of representative American plays from the colonial period to the present, with emphasis on the drama as an expression of the national life and culture.

MODERN DRAMA

(See English 346)

MODERN DRAMATISTS

(See Comparative Literature 441)

[491. SEMINAR IN THEATRE HISTORY]

Not offered in 1967-68.

495. THEATRE AESTHETICS

Fall term. Credit four hours. Prerequisites, Speech and Drama 285 (Theatre Arts) plus two 300-level or 400-level courses in drama. W 2:00-4:25. Mr. Albright.

The chief theories of dramatic production in relation to aesthetic principles.

[497. THEATRE CRITICISM]

Not offered in 1967-68.



## 595. SEMINAR IN THEATRE AESTHETICS

Fall term. Credit four hours. Prerequisite, Speech and Drama (Theatre Arts) 495 or consent of instructor. T 1:25-3:20, plus an hour to be arranged. Mr. Clancy.

Selected topics in theatre aesthetics.

## [597. SEMINAR IN THEATRE CRITICISM]

Not offered in 1967-68.

## 690. THESES AND SPECIAL PROBLEMS IN DRAMA AND THE THEATRE

Either term. Credit and hours to be arranged. Messrs. Albright, Carlson, Goff, Clancy, and Beck.

For description see the *Announcement of the Graduate School*.

## CINEMA

## 375. THE HISTORY OF THE MOTION PICTURE

Fall term. Credit four hours. T Th 11:15. Laboratory, T 2:00-4:25. Mr. Beck.

An introduction to the history and art of the film: its characteristic problems, devices, and development. Representative motion pictures, from *The Great Train Robbery* and Griffith's *The Birth of a Nation* or *Intolerance* to contemporary films of significance, will be studied. Lectures, discussions, and reports.

## 376. THE DOCUMENTARY AND EXPERIMENTAL FILM

Spring term. Credit four hours. T Th 11:15. Laboratory, T 2:00-4:25. Mr. Beck.

An examination of the non-fiction film and the experimental film. Attention is given to the film maker as artist, propagandist, and recorder. Representative examples of film essays, American and foreign, will be studied. Lectures, demonstrations, discussions, and reports.

## [493. SEMINAR IN THE FILM]

Not offered in 1967-68.

## HONORS

## 328-329. INDEPENDENT STUDY: HONORS

Throughout the year. Credit four hours a term. Prerequisite, acceptance as a candidate for Honors. Hours to be arranged. Members of the Department.

## 428. HONORS SEMINAR

Spring term. Credit four hours. Prerequisite, senior standing as a candidate for Honors. Hours to be arranged. Members of the Department.

## 429. HONORS RESEARCH

Fall term. Credit four hours. Prerequisite, senior standing as a candidate for Honors. Hours to be arranged. Members of the Department.

## INTERDEPARTMENTAL COURSES

### 372. PROCESSES OF ECONOMIC GROWTH AND DEVELOPMENT

Spring term. Credit four hours. T Th S 10:10. Mr. Morse and guest lecturers.

An adaptation of Economics 372 for students who have not had Economics 103-104, or who are not majoring in economics. It is identical to Economics 372 (students in both courses attend the same lectures), except that students registered in Interdepartmental 372 will not be held responsible in examinations for technical economic material. For a description of content, see Economics 372.

### 572. PROCESSES OF ECONOMIC GROWTH AND DEVELOPMENT

Same course as 372 but for graduate students.

## LATIN AMERICAN STUDIES

The attention of students interested in Latin American Studies is called to the variety of courses in this field offered in various departments: Agronomy 401 (Agr.); Agricultural Economics 665, 667 (Agr.); Animal Science 400 (Agr.); Anthropology 364, 432, 531, 532; Economics 325, 565; Government 300, 340, 540; History 319-320, 488, 489; Housing and Design 545-546 (H.Ec.); Industrial and Labor Relations 533, 534, 632, 662 (ILR); Portuguese and Quechua languages; Rural Sociology 414, 420 (Agr); Sociology 330, 350, 433, 530, 632, 657; Spanish 201A, 397-398, 489, 590.

### SEMINAR: LATIN AMERICAN STUDIES 602

Spring term. Credit four hours. Hours to be arranged. Staff.

A required course for all graduate students minoring in Latin American studies. Students will work on projects in their field of interest under the direction of a faculty member. Various faculty specialists in Latin American affairs will participate in the seminar.

## THE SIX-YEAR PH.D. PROGRAM

Limited to forty students a year, this program leads to the A.B. degree in three years, the M.A. in four, and the Ph.D. in six. It is designed for superior students who are bound for advanced study in the liberal arts or sciences. All students admitted to it will be given financial aid based on need, renewable for their three undergraduate years (so long as their performance is satisfactory). For each of their three graduate years, provided that they meet graduate-school standards, they will be awarded fellowships worth \$3000 plus tuition and fees.

**AIMS OF THE PROGRAM.** The Six-Year Ph.D. Program is intended for the exceptionally able, committed student who is likely to find undergraduate routines confining and the pace of the regular A.B. course too slack. Students of this sort, to avoid the let-down that can follow the transition from school to college, sometimes accelerate on

their own power, at the cost either of early, narrow specialization, or of shallow grounding for graduate work. For these students and others, the Six-Year Ph.D. Program balances acceleration with enrichment, providing an integrated course of study with a strong liberal-arts core. By making undergraduate study continuous with study for the graduate degrees, the program also reduces the waste that can follow the unsettling transition to graduate work, and shortens the long, disheartening apprenticeship that graduate life too commonly involves.

**SUMMER STUDY.** Students accepted for the program will be brought to Cornell for a preliminary summer session of six weeks (with room, board, and travel paid) following their school graduation. Work in the summer will be divided between a small seminar in a special topic, designed to introduce students to college study, and intensive work in languages.

Later summers are free, but students who have special needs may be supported in research under the guidance of faculty members at Cornell or in travel and study abroad. Summer work will not be looked upon as a way to accelerate more rapidly (to reach the total of 120 hours needed for graduation, each student need earn only 10 hours of advanced standing credit) but as a way to enrich and fill out a student's education.

During their first years in the program, all students will be expected to be able to read two foreign languages (French and German are the most useful, with Latin, Greek, and Italian of special importance for the humanities, and Russian of growing importance in the sciences). The seminars will take this competence for granted. Students who fall short of these expectations may use the first summer to develop (or even to begin) their language. All students will also be expected to have an acquaintance with the differential calculus, not simply as a tool but as one of the great intellectual achievements of the Western world. Again, the first summer may be used to gain or improve this acquaintance. All students will further be expected to know the subtlety and power of the English language and to use it well.

**THE SEMINARS AND THE ADVISERS.** During their three undergraduate years students in the program will be freed of formal requirements. They need not even designate a major. Each student will be expected to work out, by consultation with his adviser, an individual program of study that suits his needs and leads him into graduate study in his chosen field. All students are expected to take one of the special seminars each year, and three or four other courses each term chosen from the regular college offerings. In the first year this will ordinarily represent a load of sixteen hours a term; in later years, sixteen to nineteen hours a term.

The seminars are intended to provide a center for the student's general education, and to introduce him to areas in which his special interests may develop. The courses will serve a variety of aims, among them that of giving training in depth in the subjects of students' special interests. The seminars are of different kinds. Some are broad in scope,

some rather sharply focused upon special problems. Some are more advanced than others and may require special background, but all are open to any student in the program, at any level. All seminars will demand sustained independent work and clear, accurate writing.

The seminars will be as follows (each student in the program will enroll in one, and regular students in the College may also apply for admission, up to the limit of fifteen participants):

#### SEMINAR IN HISTORY AND LITERATURE

Throughout the year. Credit six hours a term. Hours to be arranged. O. J. M. Jolles, Professor of German Literature and Chairman, Department of German. Topic: Concepts of man from 1750 to the present.

The seminar will investigate the various premises underlying the writing of historians, and of philosophical or literary documents which deal with history. Such topics as historical progress, historical relativism, history as a science or as literature, the role of great men, etc., will be discussed. The texts will include works by such writers as Voltaire, Herder, Kant, Ranke, Hegel, Taine, Buckle, Marx, Spengler, Toynbee, and others. Suggested readings: Hans Meyerhoff, *The Philosophy of History in Our Time*; Fritz Stern, *The Varieties of History*; and Pieter Geyl, *Debates with Historians*.

#### SEMINAR IN PHYSICAL SCIENCE

Throughout the year. Credit six hours a term. Hours to be arranged. Andreas Albrecht, Professor of Chemistry. Topic: Some fundamental concepts of physical science.

Past and present thinking on some of the powerful ideas in modern science will be explored: fundamental particles, observables and the indeterminacy principle, energy and its conservation, entropy and criteria for spontaneous change, molecular averages and assembly properties, symmetry in space and time. Discussions will be based on writings by Max Born, Erwin Schrodinger, J. Willard Gibbs, G. N. Lewis, P. Ehrenfest, Louis de Broglie, et al.

#### SEMINAR IN PHILOSOPHY AND LITERATURE

Spring term. Credit six hours. Hours to be arranged. Stuart Brown, Professor of Philosophy, and Dean, College of Arts and Sciences. Topic: The Bloomsbury Group.

The seminar will be a study of the writings and the influence of a group of friends, formed about a nucleus of young men who had been students together at Cambridge at the turn of the twentieth century. Most had come strongly under the influence of G. E. Moore, a young philosopher and don; all were passionately devoted to art and truth. Among the members of the group were the novelists, E. M. Forster and Virginia Woolf; the historian and biographer, Lytton Strachey; the economist, J. M. Keynes; the novelist and political scientist, Leonard Woolf; and the art critics, Clive Bell and Roger Fry. Special attention will be given to the philosophy of G. E. Moore.

#### SEMINAR IN MATHEMATICS

Throughout the year. Credit six hours a term. Hours to be arranged. Paul Olum, Professor of Mathematics. Topic: The art and science of mathematics.

The objective is to present basic notions of mathematics within the framework of a study of the development of mathematics. The following topics will receive attention: differential and integral calculus; elementary number theory; group theory; foundations of geometry; linear algebra; elementary

theory of differential equations. The approach will be designed to show why the fundamental concepts of mathematics arise and why they survive; this approach will bring out the criteria of generality and applicability but will not preclude the acquisition, by those attending the seminar, of good and efficient technique. Suggested readings: Courant and Robbins, *What is Mathematics?*; Klein, *Elementary Mathematics from an Advanced Standpoint*; Davenport, *The Higher Arithmetic*; Hardy, *A Mathematician's Apology*; Birkhoff and MacLane, *Survey of Modern Algebra*.

#### SEMINAR IN THE HISTORY OF IDEAS

Throughout the year. Credit six hours a term. Hours to be arranged. Cushing Strout, Professor of English, and member of the American Studies Committee. Topic: Dimensions of freedom.

An examination of the multiple meanings and problems of freedom in American culture. Selection of texts will emphasize classic themes and spokesmen in a variety of forms: histories, theories, cases, fiction. The issues centering in the ideal of freedom will be topically studied in historical context, and analysis will be made of such different dimensions as free will and determinism, majority rule and minority rights, church and state, individualism and conformity, alienation and community. Texts will include de Tocqueville's *Democracy in America*, Reisman's *The Lonely Crowd*, and *The Federalist*; essays by Edwards, Emerson, Thoreau, and James; novels by Twain, James, Dos Passos, Bellow, and Ellison; and famous cases like the Scopes trial, Sacco-Vanzetti, and the Oppenheimer security hearing.

#### SEMINAR IN PSYCHOLOGY

Throughout the year. Credit six hours a term. Hours to be arranged. R. B. MacLeod, Professor of Psychology. Topic: Conceptions of human nature.

The attempts that have been made to identify and explain what is distinctively human about man will be explored. The focus will be on psychological theory, but readings will be drawn from scientific, philosophical, theological, political, and literary works which have had important things to say about the nature of man. No attempt will be made to cover all branches of psychology, but a good sample of psychology's problems will be discussed and students will be introduced to the major movements in classical and contemporary psychology.

#### SEMINAR IN LITERATURE

Fall term. Credit six hours. Hours to be arranged. Scott Elledge, Professor of English. Topic: The concept of literary "ages."

A series of assignments designed to test the validity of arranging literary studies according to the age in which they were written. How do critics and literary historians, for example, define the "Augustan Age" in England? What philosophical, political, and artistic ideas are sufficiently pervasive in the literature written between 1688 and 1744 to justify calling these fifty-six years an age? How do you tell when one age ends and another begins? Why are the questions important?

#### SEMINAR IN THE MIDDLE AGES

Throughout the year. Credit six hours a term. Hours to be arranged. James W. Marchand, Professor of Linguistics and German Literature. Topic: The Trivium.

The seminar will investigate the influence of the study of grammar, rhetoric, and logic on literature and thought in the Middle Ages. It will begin with the study of a typical curriculum in the Middle Ages, as seen in the *Metatlogicon*

of John of Salisbury. In each phase, the class will actually study the textbooks usually used in the medieval curriculum. The knowledge and experience thus gained will be applied to the study of Wolfram's *Parzival* and Dante's *Divine Comedy*, along with other representative works selected according to the interests and experience of members of the Seminar. An attempt will be made to place the medieval treatments of grammar, rhetoric, and logic in a larger historical context by constant reference to both classical and modern theories.

In 1968-69 four additional seminars will be added.

The director of each seminar will serve as adviser to ten or twelve students in the program, consulting with them, helping them to select courses, and guiding them ultimately in their choices of a field and a director for their graduate work.

**ADMISSION TO THE PROGRAM.** Candidates for the program need not have decided upon their major subject, but they should feel a strong commitment to advanced study in the liberal arts or sciences. To apply, they should file the regular application for admission to the College of Arts and Sciences and at the same time ask for a copy of the *Application for Cornell Six-Year Ph.D. Program*. Both applications must be turned in by the middle of January. So that scores will be available early, all candidates are urged to take the College Board Scholastic Aptitude Test in December. Three College Board Achievement Tests are also required: English composition, a foreign language, and either a second language, mathematics, or a subject which is likely to be the student's major interest in college. All candidates are further urged to submit scores of the PSAT and achievement tests taken in their junior year.

Candidates who pass the first screening of applications will be interviewed by a member of the program staff.

While the program is an integrated six-year design, it is not meant to be binding or inflexible. Students whose needs appear to be better served outside the program, or who desire from one motive or another to leave it, may transfer to the regular Cornell curricula. Their places will be filled by qualified students from the College of Arts and Sciences. To apply, students already at Cornell should see the Director of the program, Dean S. M. Parrish, College of Arts and Sciences, Goldwin Smith Hall.

## Freshman Seminars

Supported by the Six-Year Ph.D. Program, each seminar is open to twelve selected freshmen not in the program. Application may be made on forms in Goldwin Smith 159. Final selections of candidates will be made at the beginning of the spring term.

In the spring of 1968, the seminars will be:

### FRESHMAN SEMINAR IN LITERATURE

Credit four hours. Topic: to be announced.

## FRESHMAN SEMINAR IN MATHEMATICS

Credit four hours. Topic: to be announced.

## SOCIETY FOR THE HUMANITIES

Mr. Max Black, Director.

The Society awards fellowships for research in the humanities in three categories: Senior Visiting Fellowships, Faculty Fellowships, Postdoctoral Fellowships. All Fellows offer courses or seminars intended to be off the beaten track. Detailed information about such courses and seminars is circulated to interested departments.

Membership in the Society's courses and seminars is open, by invitation, to suitably qualified undergraduates and graduate students. Credit can be earned, but no examinations or other formal exercises are required and the only grade given is S.

Further particulars can be obtained from the Secretary of the Society at 218 Goldwin Smith Hall.

Courses offered in 1967-68 will include:

## 401-402. THE LIMITS OF LITERATURE

Credit four hours a term. Open, by invitation, to seniors and graduate students. Mr. Bishop.

A study of some general questions respecting the nature of literary works, starting with the difference between non-literary and literary uses of language, and going on to matters like the truth-value of literature, the role of metaphor, sound and sense, tone. The course will include experiments in composition as well as readings in authors who exhibit these problems: the Bible, Thoreau, Keats, etc.

## 501-502. SEMINAR IN ANTHROPOLOGY AND RELATED HUMANITIES

Throughout the year. Credit four hours a term. Open by invitation to seniors and graduate students. Mr. Victor Turner.

Under the general topic of "margins, thresholds, and transitions," the course will explore those phenomena and processes of culture and society that lie on or beyond the margins of social structure, appear during the "liminal" phases of *rites de passage*, and characterize low or outcaste social status. The study of society is more than the study of social structure. An examination of "edge" phenomena and transitions between structurally defined statuses may provide clues to another social dimension, highly resistant to classification, but generative of new values. Many sources of information will be sifted, ranging from anthropological, sociological and psychological studies to works of literature and literary criticism. "Nothing human will be alien" to this inquiry.

## 503. SEMINAR ON LITERATURE AND THE VISUAL ARTS IN NINETEENTH-CENTURY FRANCE

Fall term. Credit four hours. Open by invitation to seniors and graduate students. Mr. Jean Seznec.

From the Romantic period onwards, the connection between literature and art assumes a special importance: it is in fact a common feature of the century. The aspects of this relationship, however, are extremely diverse; they

vary in depth and complexity, and their study requires a great flexibility of treatment.

Stendhal, Balzac, Michelet, Baudelaire, Flaubert, the Symbolists, etc., represent so many different cases; these will be investigated with the fullest possible use of illustrations. The ultimate purpose will be to define the benefits which literary criticism can derive from this approach.

The seminar is intended for graduate students who will be expected to take an active part in it, according to their particular interests and qualifications.

## COURSES IN OTHER DIVISIONS

Courses of interest to students in the College of Arts and Sciences are offered in military science, aerospace studies (AFROTC), naval science, and physical education.

The offerings in military training are described in the *Announcement of Officer Education*.

The courses in physical education are described in publications which the Department of Physical Education makes available to students at registration.



# COLLEGE OF ARTS AND SCIENCES

1967-68

## UNIVERSITY ADMINISTRATION

James A. Perkins, President of the University  
Dale R. Corson, University Provost  
Mark Barlow, Jr., Vice President for Student Affairs  
John E. Burton, Vice President - Business  
Lewis H. Durland, University Treasurer  
Franklin A. Long, Vice President for Research and Advanced Studies  
E. Hugh Luckey, Vice President for Medical Affairs  
Thomas W. Mackesey, Vice Provost  
Paul L. McKeegan, Director of the Budget  
Steven Muller, Vice President for Public Affairs  
Arthur H. Peterson, University Controller  
Robert L. Sproull, Vice President for Academic Affairs  
Neal R. Stamp, Secretary of the Corporation, and University Counsel

## PROFESSORS-AT-LARGE\*

Raymond Aron	Mark Kac	Charles Singleton
Sir Eric Ashby	L. S. B. Leakey	Cosio Villegas
Manfred Eigen	Barbara McClintock	George Henrik von Wright
Gino Gorla	Sir Peter Medawar	

## FACULTY†

Stuart MacDonald Brown, Jr., Dean of the College of Arts and Sciences  
Stephen M. Parrish, Associate Dean of the College of Arts and Sciences  
F. Dana Payne, Jr., Associate Dean of the College of Arts and Sciences  
Alexander J. Cheney, Assistant Dean of the College of Arts and Sciences  
Robert A. Scott, Assistant Dean of the College of Arts and Sciences  
Barbara B. Hirshfeld, Assistant Dean of the College of Arts and Sciences

Meyer Howard Abrams, Ph.D., Frederic J. Whiton Professor of English\*  
Charles D. Ackerman, Ph.D., Assistant Professor of Sociology  
Barry Banfield Adams, Ph.D., Assistant Professor of English  
Caesar Blair Adams, A.B., Assistant Professor of English  
George Plimpton Adams, Jr., Ph.D., Professor of Economics  
Robert Martin Adams, Ph.D., Professor of English  
Howard Bernhardt Adelman, Ph.D., Professor of Histology and Embryology,  
Emeritus

\* Professors-at-Large are distinguished nonresident members of the University Faculty. During short visits to the campus, of up to a month's duration, made at irregular intervals, they hold seminars, give public lectures, and consult informally with students and faculty.

† Numbers following names indicate: (1) leave of absence, fall term, 1967-68; (2) leave of absence, spring term, 1967-68; (3) leave of absence, 1967-68.

- Frederick Browning Agard, Ph.D., Professor of Linguistics  
 Ralph Palmer Agnew, Ph.D., D.Sc., Professor of Mathematics  
 Andreas C. Albrecht, Ph.D., Professor of Chemistry  
 H. Darkes Albright, Ph.D., Professor of Theatre Arts  
 Vinay Ambegaokar, Ph.D., Associate Professor of Physics  
 Archie Randolph Ammons, B.S., Assistant Professor of English<sup>3</sup>  
 Benedict Richard O'Gorman Anderson, B.A., Assistant Professor of Government  
 John Maxwell Anderson, Ph.D., Professor of Zoology, Section on Genetics,  
 Development and Physiology, Division of Biological Sciences  
 Judith Helena Anderson, Ph.D., Assistant Professor of English  
 Moshe Anisfeld, Ph.D., Assistant Professor of Psychology  
 Douglas Nelson Archibald, Ph.D., Assistant Professor of English  
 Robert Ascher, Ph.D., Professor of Anthropology and Archaeology  
 William Wesley Ash, B.S., Instructor in Physics  
 Neil William Ashcroft, Ph.D., Assistant Professor of Physics  
 Douglas E. Ashford, Ph.D., Associate Professor of Government  
 Claire Asselin, M.A., Assistant Professor of Linguistics  
 William Weaver Austin, Ph.D., Professor of Music  
 James Burton Ax, Ph.D., Professor of Mathematics  
 William Ian Axford, Ph.D., Professor of Astronomy<sup>3</sup>  
 Michael Slavo Balch, Ph.D., Assistant Professor of Mathematics  
 Cesáro Bandera-Gómez, M.A., Assistant Professor of Romance Studies  
 Harlan Parker Banks, Ph.D., Professor of Botany  
 Dietger Bansberg, Lecturer in German  
 Evelyn Barish, Ph.D., Assistant Professor of English  
 LeRoy Leshner Barnes, Ph.D., Professor of Biophysics  
 Simon H. Bauer, Ph.D., Professor of Chemistry  
 Gordon E. Beck, Ph.D., Assistant Professor of Theatre Arts  
 Jonathan Mock Beck, M.A., Assistant Professor of Mathematics  
 Leroy James Benoit, Ph.D., Professor of Linguistics  
 Anne LeGrace Benson, M.F.A., Assistant Professor of the History of Art  
 Jacques Béreaud, Doctorat D'Université, Assistant Professor of Romance  
 Studies  
 Karl Berkelman, Ph.D., Professor of Physics<sup>3</sup>  
 Leonard Berkowitz, Ph.D., Professor of Psychology  
 Harley Bernbach, M.S., Assistant Professor of Psychology  
 Walter F. Berns, Jr., Ph.D., Professor of Government  
 Jerome Bernstein, Ph.D., Assistant Professor of Spanish-American Literature  
 Israel Berstein, Ph.D., Professor of Mathematics  
 Hans Albrecht Bethe, Ph.D., John Wendell Anderson Professor of Physics  
 Vincent Michael Bevilacqua, Ph.D., Assistant Professor of Theatre Arts  
 Gian-Paolo Biasin, Ph.D., Associate Professor of Romance Studies<sup>1</sup>  
 Knight Biggerstaff, Ph.D., Professor of Chinese History  
 Jonathan Peale Bishop, Ph.D., Associate Professor of English<sup>3</sup>  
 Morris Gilbert Bishop, Ph.D., Kappa Alpha Professor of Romance Literature,  
 Emeritus  
 Vilhjalmur T. Bjarnar, M.A., Lecturer in Germanic Linguistics  
 Max Black, Ph.D., D. Lit., Susan Linn Sage Professor of Philosophy  
 Eric Albert Blackall, M.A., Dr. Phil., Litt. D., Jacob Gould Schurman  
 Professor of German Literature  
 Jean Frantz Blackall, Ph.D., Lecturer in English  
 Antonie William Charles Blackler, Ph.D., Associate Professor of Zoology,  
 Section of Genetics, Development and Physiology, Division of Biological  
 Sciences

Maurice Dean Blehert, M.A., Assistant Professor of English  
 Alfred Theodore Blomquist, Ph.D., Professor of Chemistry  
 Allan David Bloom, Ph.D., Associate Professor of Government  
 Arthur L. Bloom, Ph.D., Associate Professor of Geological Sciences  
 Nicholas C. Bodman, Ph.D., Professor of Linguistics  
 Albert Wilhelm Boesche, Ph.D., Professor of German, Emeritus  
 John Francis Boshier, Ph.D., Professor of Modern European History  
 Raymond Bowers, Ph.D., Professor of Physics  
 John Douglas Boyd, M.A., Assistant Professor of English  
 Richard P. Boyle, Ph.D., Assistant Professor of Sociology  
 Baird H. Brandow, Ph.D., Instructor in Physics  
 Dalai Brenes, Ph.D., Professor of Romance Studies  
 Herbert Whittaker Briggs, Ph.D., Goldwin Smith Professor of International  
 Law  
 Urie Bronfenbrenner, Ph.D., Professor of Psychology  
 Andrew Arnold Browman, Ph.D., Assistant Professor of Physics  
 Kenneth M. Brown, Ph.D., Assistant Professor of Computer Science  
 Lawrence David Brown, Ph.D., Assistant Professor of Mathematics  
 Stanley Gordon Brown, M.S., Instructor in Physics  
 Stuart MacDonald Brown, Jr., Ph.D., Professor of Philosophy  
 Theodore M. Brown, Ph.D., Associate Professor of the History of Art  
 Sanford Budick, Ph.D., Assistant Professor of English  
 James M. Burlitch, Ph.D., Assistant Professor of Chemistry  
 Edwin Arthur Burt, S.T.M., Ph.D., L.H.D., Susan Linn Sage Professor of  
 Philosophy, Emeritus  
 Richard A. Caldwell, Ph.D., Assistant Professor of Chemistry  
 Robert Gilmer Calkins, Ph.D., Assistant Professor of the History of Art  
 Francis A. Cancian, Ph.D., Associate Professor of Anthropology  
 John Vincent Canfield, Ph.D., Assistant Professor of Philosophy  
 Harry Caplan, Ph.D., Goldwin Smith Professor of the Classical Languages  
 and Literatures, Emeritus  
 Anthony Caputi, Ph.D., Professor of English  
 Patricia J. Carden, Ph.D., Assistant Professor of Russian Literature  
 Marvin Albert Carlson, Ph.D., Associate Professor of Theatre Arts  
 Peter Ambler Carruthers, Ph.D., Professor of Physics<sup>3</sup>  
 David Giske Cassel, Ph.D., Assistant Professor of Physics  
 Terence C. Cave, Ph.D., Visiting Assistant Professor of Romance Studies  
 Amanda E. Chacona, B.A., Lecturer in Spanish  
 Wallace L. Chafe, Ph.D., Visiting Professor of Linguistics  
 Jan Michael Chaiken, Ph.D., Assistant Professor of Mathematics  
 Luke L. Y. Chang, Ph.D., Assistant Professor of Geological Sciences  
 Eliot D. Chapple, Ph.D., Visiting Professor of Anthropology  
 Stephen Urban Chase, Ph.D., Associate Professor of Mathematics  
 Nai-Ruenn Chen, Ph.D., Assistant Professor of Economics  
 Geoffrey V. Chester, Ph.D., Professor of Physics  
 Fu-Chung Chin, B.A., Instructor in Chinese  
 Chuen-tang Chow, M.A., Assistant Professor of Chinese Literature  
 Lindsey Churchill, Ph.D., Associate Professor of Sociology  
 James Harvey Clancy, Ph.D., Professor of Theatre Arts  
 Kenneth Frederick Clark, Ph.D., Assistant Professor of Geological Sciences  
 M. Gardner Clark, Ph.D., Professor of Industrial and Labor Relations  
 Robert Theodore Clausen, Ph.D., Professor of Botany  
 Michael J. Colacurcio, Ph.D., Assistant Professor of English  
 Alice Mary Colby, Ph.D., Associate Professor of Romance Studies

- LaMont C. Cole, Ph.D., Professor of Ecology, Section of Ecology and Systematics, Division of Biological Sciences  
 W. Storrs Cole, Ph.D., Professor of Geological Sciences  
 David Connor, M.A., Instructor in German Literature  
 William Donald Cooke, Ph.D., Professor of Chemistry  
 Morris Albert Copeland, Ph.D., Robert Julius Thorne Professor of Economics, Emeritus  
 Dale Raymond Corson, Ph.D., Professor of Physics  
 Robert Milo Cotts, Ph.D., Associate Professor of Physics  
 J Milton Cowan, Ph.D., Professor of Linguistics  
 G. Watts Cunningham, Ph.D., Litt.D., Susan Linn Sage Professor of Philosophy, Emeritus  
 Robert E. Cushman, Ph.D., Litt.D., Goldwin Smith Professor of Government, Emeritus  
 Joseph B. Dallett, Ph.D., Assistant Professor of German Literature  
 Richard B. Darlington, Ph.D., Assistant Professor of Psychology  
 David Brion Davis, Ph.D., Ernest I. White Professor of American History  
 Tom Edward Davis, Ph.D., Professor of Economics  
 Herbert Deinert, Ph.D., Associate Professor of German Literature  
 Vincent Arthur De Luca, Ph.D., Assistant Professor of English  
 John Paul Delvaille, Ph.D., Assistant Professor of Physics  
 Jean-Jacques Demorest, Ph.D., Professor of Romance Studies<sup>a</sup>  
 Richard John DeSa, Ph.D., Lecturer, Section of Biochemistry and Molecular Biology, Division of Biological Sciences  
 John William DeWire, Ph.D., Professor of Physics<sup>a</sup>  
 Herbert Dieckmann, Ph.D., Avalon Foundation Professor in the Humanities  
 William C. Dilger, Ph.D., Associate Professor of Ethology, Section of Neurobiology and Behavior, Division of Biological Sciences  
 Keith Sedgwick Donnellan, Ph.D., Associate Professor of Philosophy<sup>a</sup>  
 Archie Thompson Dotson, Ph.D., Associate Professor of Government  
 Esther Gordon Dotson, B.A., Lecturer in the History of Art  
 Douglas Fitzgerald Dowd, Ph.D., Professor of Economics  
 Frank D. Drake, Ph.D., Professor of Astronomy  
 Clifford John Earle, Ph.D., Associate Professor of Mathematics  
 Charles L. Eastlack, Ph.D., Assistant Professor of Linguistics  
 John Minor Echols, Ph.D., Professor of Linguistics<sup>a</sup>  
 Donald D. Eddy, M.A., Assistant Professor of English  
 Donald Andrew Edwards, Ph.D., Associate Professor of Physics  
 James Eells, Jr., Ph.D., Professor of Mathematics  
 Peter A. Egelstaff, Ph.D., Visiting Professor of Physics  
 Mario Einaudi, Dr. Jur., Walter S. Carpenter, Jr., Professor of International and Comparative Politics  
 Robert Henry Elias, Ph.D., Professor of English  
 Scott Bowen Elledge, Ph.D., Professor of English  
 Stephen Thompson Emlen, Ph.D., Assistant Professor, Section of Neurobiology and Behavior, Division of Biological Sciences  
 Donald English, M.B.A., Professor of Economics, Emeritus  
 Wilmoth Duane Evans, B.Sc., Professor of Economics  
 Gordon Hubert Fairbanks, Ph.D., Professor of Linguistics<sup>a</sup>  
 William Guignard Faris, Ph.D., Assistant Professor of Mathematics  
 Robert Thomas Farrell, M.A., Assistant Professor of English  
 Roger Hamlin Farrell, Ph.D., Professor of Mathematics<sup>a</sup>  
 Robert Clinton Fay, Ph.D., Assistant Professor of Chemistry  
 John C. H. Fei, Ph.D., Professor of Economics  
 Richard F. Fenno, Jr., Ph.D., Visiting Professor of Government

Francis George Fike, Jr., Ph.D., Assistant Professor of English  
 John Alban Finch, Ph.D., Assistant Professor of English  
 Arthur I. Fine, Ph.D., Associate Professor of Philosophy  
 Daniel Henry Finlay, Ph.D., Assistant Professor of English  
 Patrick C. Fischer, Ph.D., Associate Professor of Computer Science  
 Michael Ellis Fisher, Ph.D., Professor of Chemistry and Mathematics  
 Douglas Beach Fitchen, Ph.D., Associate Professor of Physics  
 Heywood Fleisig, M.A., Assistant Professor of Economics  
 Ephim Gregory Fogel, Ph.D., Professor of English  
 Frederick A. Foos, B.A., Assistant Professor of Linguistics  
 Edward Whiting Fox, Ph.D., Professor of History  
 Kenneth Chester Frederick, Ph.D., Assistant Professor of English  
 Jack Freed, Ph.D., Associate Professor of Chemistry  
 Frank Samuel Freeman, Ed.D., Professor of Psychology, Emeritus  
 Walter Hoyt French, Ph.D., Professor of English, Emeritus  
 Eleonore Frey, Ph.D., Assistant Professor of German Literature  
 Wolfgang H. J. Fuchs, Ph.D., Professor of Mathematics  
 James Wells Gair, Ph.D., Assistant Professor of Linguistics  
 Paul Wallace Gates, Ph.D., John Stambaugh Professor of History  
 Hillel Halkin Gershenson, Ph.D., Assistant Professor of Mathematics  
 David Henry Geske, Ph.D., Professor of Chemistry  
 George Gibian, Ph.D., Professor of Russian Literature  
 Anne A. Gibson, M.F.A., Instructor in Theatre Arts  
 Eleanor J. Gibson, Ph.D., Professor of Psychology  
 James Jerome Gibson, Ph.D., Professor of Psychology  
 Quentin H. Gibson, Ph.D., D.Sc., Professor of Biochemistry, Section of Biochemistry and Molecular Biology, Division of Biological Sciences  
 Perry Webster Gilbert, Ph.D., Professor of Zoology, Section of Neurobiology and Behavior, Division of Biological Sciences  
 Antonia Glasse, M.A., Instructor in Russian Literature  
 Lewin A. Goff, Ph.D., Professor of Theatre Arts  
 Frank Hindman Golay, Ph.D., Professor of Economics  
 Thomas Gold, M.A., Professor of Astronomy  
 Bruce Charles Goldberg, Ph.D., Assistant Professor of Philosophy  
 Rose K. Goldsen, Ph.D., Associate Professor of Sociology<sup>1</sup>  
 Melvin J. Goldstein, Ph.D., Associate Professor of Chemistry<sup>2</sup>  
 Janet Gordon, M.A., Instructor in Romance Studies  
 Kurt Gottfried, Ph.D., Associate Professor of Physics  
 Paul A. Gottschalk, Ph.D., Assistant Professor of English  
 Richard Graham, Ph.D., Assistant Professor of Latin American History  
 Guy Everett Grantham, Ph.D., Professor of Physics, Emeritus  
 George C. Green, M.M., Instructor in Music  
 Robert Greenblatt, Ph.D., Assistant Professor of Mathematics  
 Kenneth Ingvard Greisen, Ph.D., Professor of Physics  
 Joseph E. Grimes, Ph.D., Visiting Associate Professor of Linguistics  
 Alexander B. Griswold, B.A., Visiting Professor of the History of Southeast Asian Art and Archaeology  
 Donald Eugene Groom, Ph.D., Instructor in Physics  
 Franz Lucretius Gross, Ph.D., Assistant Professor of Physics  
 Leonard Gross, Ph.D., Professor of Mathematics<sup>3</sup>  
 Siegfried Karl Grosser, Ph.D., Assistant Professor of Mathematics  
 David I. Grossvogel, Ph.D., Professor of Romance Studies  
 Donald Jay Grout, Ph.D., Given Foundation Professor of Musicology  
 Henry Guerlac, Ph.D., Goldwin Smith Professor of the History of Science

Richard John Guillory, Ph.D., Assistant Professor, Section of Biochemistry and Molecular Biology, Division of Biological Sciences  
 Wilson M. Gulick, Jr., Ph.D., Assistant Professor of Chemistry  
 Andrew Hacker, Ph.D., Professor of Government  
 Robert Anderson Hall, Jr., Litt. D., Professor of Linguistics  
 Bruce Peter Halpern, Ph.D., Associate Professor of Psychology and Biology  
 Richard Streit Hamilton, A.B., Instructor in Mathematics  
 Gordon G. Hammes, Ph.D., Professor of Chemistry  
 Louis N. Hand, Ph.D., Associate Professor of Physics  
 Donald L. Hartill, B.S., Assistant Professor of Physics  
 Paul Leon Hartman, Ph.D., Professor of Physics  
 Juris Hartmanis, Ph.D., Professor of Computer Science  
 Martin O. Harwit, Ph.D., Associate Professor of Astronomy  
 Baxter L. Hathaway, Ph.D., Professor of English  
 Donald P. Hayes, Ph.D., Associate Professor of Sociology  
 George Harris Healey, Ph.D., Professor of English and Curator of Rare Books<sup>2</sup>  
 David Wilson Henderson, Ph.D., Assistant Professor of Mathematics  
 Neil W. Henry, M.A., Assistant Professor of Sociology  
 Leon A. Heppel, Ph.D., M.D., Professor of Biochemistry, Section of Biochemistry and Molecular Biology, Division of Biological Sciences  
 Neil H. Hertz, M.A., Assistant Professor of English  
 Carl Samuel Herz, Ph.D., Professor of Mathematics  
 Judith Scherer Herz, Ph.D., Lecturer in English  
 George P. Hess, Ph.D., Professor of Biochemistry, Section of Biochemistry and Molecular Biology, Division of Biological Sciences  
 George H. Hildebrand, Ph.D., Professor of Economics  
 Thomas Dana Hill, M.A., Assistant Professor of English  
 Peter John Hilton, Ph.D., Professor of Mathematics<sup>3</sup>  
 James Lynn Hoard, Ph.D., Professor of Chemistry  
 Charles Francis Hockett, Ph.D., Professor of Linguistics and Anthropology<sup>3</sup>  
 Richard I. Hofferbert, Ph.D., Assistant Professor of Government  
 Roald Hoffmann, Ph.D., Associate Professor of Chemistry  
 Donald Frank Holcomb, Ph.D., Professor of Physics  
 Robert W. Holley, Ph.D., Professor of Biochemistry, Section of Biochemistry and Molecular Biology, Division of Biological Sciences  
 William C. Holmes, M.A., Assistant Professor of Music  
 Martin Horwitz, M.A., Assistant Professor of Russian Literature  
 John Tseng Hsin Hsu, M.M., Professor of Music  
 Robert E. Hughes, Ph.D., Professor of Chemistry<sup>3</sup>  
 Melvin Lovell Hulse, Ph.D., Professor of Education, Emeritus  
 Karel Husa, Master School Diploma in Composition, Professor of Music<sup>1</sup>  
 John Greenwood Brown Hutchins, Ph.D., Professor of Business History and Transportation  
 James Hutton, Ph.D., Kappa Alpha Professor of the Classics  
 John Maxwell Irvine, Ph.D., Instructor in Physics  
 Alfred L. Ivry, Ph.D., Assistant Professor of Arabic and Hebrew Studies  
 Augusta L. Jaryc, B.A., Lecturer in Russian  
 James J. John, Ph.D., Professor of Paleography and Medieval History  
 John Raven Johnson, Ph.D., Todd Professor of Chemistry, Emeritus  
 O. J. Matthijs Jolles, Ph.D., Professor of German Literature  
 Robert Burton Jones, Jr., Ph.D., Associate Professor of Linguistics  
 Richard Jung, Ph.D., Lecturer in Sociology  
 Donald Kagan, Ph.D., Professor of Ancient History  
 George McTurnan Kahin, Ph.D., Professor of Government  
 Alfred E. Kahn, Ph.D., Professor of Economics<sup>1</sup>

- Peter Jack Kahn, Ph.D., Assistant Professor of Mathematics  
 Michael G. Kammen, Ph.D., Assistant Professor of American History  
 Carol Kaske, Ph.D., Lecturer in English  
 Robert Earl Kaske, Ph.D., Professor of English  
 Michael William Kaufman, Ph.D., Assistant Professor of English  
 Gerald Baptiste Kelley, Ph.D., Associate Professor of Linguistics  
 Myron Slade Kendrick, Ph.D., Professor of Economics and Public Finance,  
 Emeritus  
 Kenneth A. R. Kennedy, Ph.D., Assistant Professor of Anthropology  
 Eldon Gorden Kenworthy, Ph.D., Assistant Professor of Government  
 Harry Kesten, Ph.D., Professor of Mathematics<sup>a</sup>  
 Jack Carl Kiefer, Ph.D., Professor of Mathematics  
 George Arthur Kiersch, Ph.D., Professor of Geological Sciences  
 Robert Wylie Kilpatrick, Ph.D., Assistant Professor of Economics  
 Toichiro Kinoshita, Ph.D., Professor of Physics  
 John R. Kirkland, Ph.D., Assistant Professor of History  
 John Kirkpatrick, Professor of Music  
 Gordon MacDonald Kirkwood, Ph.D., Professor of the Classics  
 Simon Bernard Kochen, Ph.D., Professor of Mathematics  
 Helmut G. Koenigsberger, Ph.D., Professor of Early Modern European History  
 Edward Kostiner, B.S., Assistant Professor of Chemistry  
 Norman Kretzmann, Ph.D., Associate Professor of Philosophy  
 John W. Kronik, Ph.D., Associate Professor of Romance Studies  
 James Arthur Krumhansl, Ph.D., Professor of Physics  
 Herbert L. Kufner, Ph.D., Professor of Linguistics  
 Walter F. LaFeber, Ph.D., Professor of American History  
 Bernd Lambert, Ph.D., Assistant Professor of Anthropology  
 William Wilson Lambert, Ph.D., Professor of Psychology, Sociology, and  
 Anthropology  
 Douglas Allan Lancaster, Ph.D., Assistant Professor of Ornithology, Section  
 of Ecology and Systematics, Division of Biological Sciences  
 Richard James Landry, M.A., Instructor in Government  
 Albert Washington Laubengayer, Ph.D., Professor of Chemistry, Emeritus  
 Richard Bengt Lavine, Ph.D., Assistant Professor of Mathematics  
 David M. Lee, Ph.D., Associate Professor of Physics  
 Richard Leaman Leed, Ph.D., Associate Professor of Linguistics  
 Wesley Ernest LeMasurier, Ph.D., Assistant Professor of Geological Sciences  
 Samuel Leeson Leonard, Ph.D., Professor of Endocrinology, Section on  
 Genetics, Development and Physiology, Division of Biological Sciences  
 Harry Levin, Ph.D., Professor of Psychology  
 Simon Asher Levin, Ph.D., Assistant Professor of Mathematics  
 Charles Samuel Levy, Ph.D., Associate Professor of English  
 John Menzies Lewis, B.A., Instructor in Government  
 John Wilson Lewis, Ph.D., Associate Professor of Government  
 John E. Lind, Jr., Ph.D., Assistant Professor of Chemistry  
 William Charles Lipke, Ph.D., Assistant Professor of the History of Art  
 Alexander L. Lipson, M.A., Assistant Professor of Linguistics  
 Raphael Max Littauer, Ph.D., Professor of Physics<sup>2</sup>  
 S. Alexandra Littauer, M.A., Lecturer in French  
 Ta-Chung Liu, Ph.D., Goldwin Smith Professor of Economics  
 George Roger Livesay, Ph.D., Professor of Mathematics  
 Eugene Chen Loh, Ph.D., Instructor in Physics  
 Franklin A. Long, Ph.D., Professor of Chemistry  
 Richard H. W. Longabaugh, Ed. D., Assistant Professor of Sociology  
 Pardee Lowe, Jr., Ph.D., Assistant Professor of Linguistics

- Anthony Girard Lozano, Ph.D., Assistant Professor of Linguistics  
 Thomas F. Lynch, M.A., Assistant Professor of Anthropology  
 David Barry Lyons, Ph.D., Associate Professor of Philosophy  
 James B. Maas, Ph.D., Assistant Professor of Psychology  
 Gordon W. MacLennan, M.A., Assistant Professor of Linguistics  
 Robert Brodie MacLeod, Ph.D., Susan Linn Sage Professor of Psychology  
 Herbert Mahr, Ph.D., Associate Professor of Physics  
 Norman Malcolm, Ph.D., Susan Linn Sage Professor of Philosophy  
 Frederick George Marcham, Ph.D., Goldwin Smith Professor of English History  
 James W. Marchand, Ph.D., Professor of Linguistics  
 Phillip LeDuc Marcus, M.A., Assistant Professor of English  
 Parker Grimes Marden, Ph.D., Assistant Professor of Sociology  
 Carol L. Marks, Ph.D., Assistant Professor of English  
 James Frederick Mason, Ph.D., Professor of Romance Languages and Literatures, Emeritus  
 James Hendrickson Matlack, M.A., Assistant Professor of English  
 Bruce Wright Maxfield, Ph.D., Assistant Professor of Physics  
 Michael L. Mazzola, M.A., Assistant Professor of Linguistics  
 Dan Elliott McCall, Ph.D., Assistant Professor of English  
 Dorothy Kaufmann McCall, M.A., Instructor in Romance Studies  
 Richard E. McCarty, Ph.D., Assistant Professor, Section of Biochemistry and Molecular Biology, Division of Biological Sciences  
 James R. McConkey, Ph.D., Professor of English  
 Francis DeMay McConnell, M.A., Assistant Professor of English  
 William John McCoy, Jr., Ph.D., Assistant Professor of Linguistics  
 Boyce Dawkins McDaniel, Ph.D., Professor of Physics  
 William N. McFarland, Ph.D., Associate Professor of Zoology, Section of Ecology and Systematics, Division of Biological Sciences  
 Robert McGinnis, Ph.D., Professor of Sociology  
 Edwin D. McKee, Sc.D., Visiting Professor of Geological Sciences (Sept.-Nov. 67)  
 Harvey Scott McMillin, Jr., Ph.D., Assistant Professor of English  
 Jerrold Meinwald, Ph.D., Professor of Chemistry<sup>a</sup>  
 Leo Meltzer, Ph.D., Associate Professor of Psychology and Sociology  
 N. David Mermin, Ph.D., Assistant Professor of Physics  
 W. Frederick Meyer, M.M., Lecturer in Music  
 Harry H. Mietusch, Ph.D., Assistant Professor of German  
 Elizabeth Virginia Milburn, Ph.D., Assistant Professor of the Classics  
 Lee Norman Miller, Ph.D., Assistant Professor, Section of Ecology and Systematics, Division of Biological Sciences  
 William T. Miller, Ph.D., Professor of Chemistry  
 Francis Edward Mineka, Ph.D., Litt. D., Class of 1916 Professor of English  
 Nariman Burjor Mistry, Ph.D., Instructor in Physics  
 Arthur Moore Mizener, Ph.D., Old Dominion Foundation Professor of the Humanities<sup>2</sup>  
 Benton Sullivan Monroe, Ph.D., Professor of English, Emeritus  
 David Montagu, Violinist in Residence  
 Robert S. Morison, M.D., Professor of Biology  
 Edward P. Morris, Ph.D., Associate Professor of Romance Studies<sup>a</sup>  
 George H. Morrison, Ph.D., Professor of Chemistry<sup>a</sup>  
 Chandler Morse, M.A., Professor of Economics<sup>1</sup>  
 David Paul Mozingo, M.A., Assistant Professor of Government  
 Steven Muller, Ph.D., Associate Professor of Government  
 Carleton Chase Murdock, Ph.D., Professor of Physics, Emeritus



- Adolf Muschg, Ph.D., Visiting Assistant Professor of German Literature  
 Hans H. Muxfeldt, Dr. rer. nat., Professor of Chemistry  
 George C. Myers, Ph.D., Associate Professor of Sociology  
 David Nasjleti, Instructor in Spanish  
 Ulric Neisser, Ph.D., Professor of Psychology  
 Anil Nerode, Ph.D., Professor of Mathematics<sup>a</sup>  
 Curtis Putnam Nettels, Ph.D., Professor of American History, Emeritus  
 Charles Merrick Nevin, Ph.D., Professor of Geology, Emeritus  
 Herbert Frank Newhall, Ph.D., Professor of Physics  
 Pei Shin Ni, M.A., Instructor in Chinese  
 Melvin Lorrel Nichols, Ph.D., Professor of Chemistry, Emeritus  
 David Novarr, Ph.D., Professor of English  
 Richard D. O'Brien, Ph.D., Professor of Limnology, Section of Neurobiology  
 and Behavior, Division of Biological Sciences  
 Stanley James O'Connor, Ph.D., Associate Professor of the History of Art  
 Paul Martin O'Leary, Ph.D., Professor of Economics, Emeritus  
 Hugh M. Olmstead, B.A., Instructor in Russian  
 Paul Olum, Ph.D., Professor of Mathematics  
 Morris Edward Opler, Ph.D., Professor of Anthropology  
 Jay Orear, Ph.D., Professor of Physics  
 Robert M. Palmer, M.M., Professor of Music<sup>a</sup>  
 Jacob Papish, Ph.D., Professor of Chemistry, Emeritus  
 J. Stewart Parker, A.M., Instructor in English  
 Lyman George Parratt, Ph.D., Professor of Physics  
 Jean Parrish, Ph.D., Associate Professor of Romance Studies  
 Stephen Maxfield Parrish, Ph.D., Professor of English  
 Donald R. M. Paterson, M.M., Assistant Professor of Music  
 Nathan Allen Pattillo, Jr., Ph.D., Professor of the History of Art, Emeritus  
 Lawrence Edward Payne, Ph.D., Professor of Mathematics  
 Harvey S. Penefsky, Ph.D., Associate Professor of Biochemistry, Section of  
 Biochemistry and Molecular Biology, Division of Biological Sciences  
 Dexter Perkins, Ph.D., University Professor (American Civilization), Emeritus  
 Charles Allen Peterson, Ph.D., Assistant Professor of Chinese History  
 Shailer Shaw Philbrick, Ph.D., Professor of Geological Sciences  
 Burton E. Pike, Ph.D., Associate Professor of Comparative Literature and  
 German  
 Nelson C. Pike, Ph.D., Associate Professor of Philosophy  
 Walter McKenzie Pintner, Ph.D., Assistant Professor of Russian History  
 Robert Allen Plane, Ph.D., Professor of Chemistry  
 Robert Otto Pohl, Ph.D., Associate Professor of Physics  
 Richard Polenberg, Ph.D., Assistant Professor of American History  
 Richard F. Porter, Ph.D., Professor of Chemistry  
 Pietro Pucci, Ph.D., Associate Professor of the Classics  
 Joseph R. Puryear, Ph.D., Assistant Professor of Linguistics  
 Isaac Rabinowitz, Ph.D., Professor of Biblical and Hebrew Studies  
 Efraim Racker, M.D., Einstein Professor, Section of Biochemistry and  
 Molecular Biology, Division of Biological Sciences  
 June M. Fessenden Raden, Ph.D., Assistant Professor, Section of Biochemistry  
 and Molecular Biology, Division of Biological Sciences  
 Anthony Lincoln Read, Ph.D., Assistant Professor of Physics  
 Harold Julie Reed, Ph.D., Robert Julius Thorne Professor of Economics,  
 Emeritus  
 John David Reppy, Ph.D., Associate Professor of Physics  
 Blanchard Livingstone Rideout, Ph.D., Professor of Romance Studies  
 George Stewart Rinehart, Ph.D., Assistant Professor of Mathematics

- John M. Roberts, Ph.D., Professor of Anthropology  
 Noel D. Robertson, Ph.D., Assistant Professor of the Classics  
 Roderick Robertson, M.A., Instructor in Theatre Arts  
 Albert Sutherland Roe, Ph.D., Professor of the History of Art<sup>3</sup>  
 Bernard C. Rosen, Ph.D., Professor of Sociology  
 Alex Rosenberg, Ph.D., Professor of Mathematics  
 Beatrice G. Rosenberg, M.A., Instructor in English  
 Edgar Rosenberg, Ph.D., Associate Professor of English  
 Frank Rosenblatt, Ph.D., Associate Professor, Section of Neurobiology and Behavior, Division of Biological Sciences  
 Clinton Rossiter, Ph.D., LL.D., Litt. D., L.H.D., John L. Senior Professor of American Institutions<sup>3</sup>  
 Oscar Seymour Rothaus, Ph.D., Professor of Mathematics  
 Arthur William Rovine, Ph.D., Assistant Professor of Government  
 Myron Rush, Ph.D., Professor of Government  
 Joanna Russ, M.F.A., Instructor in English  
 Thomas Arthur Ryan, Ph.D., Professor of Psychology<sup>2</sup>  
 David Sachs, Ph.D., Professor of Philosophy  
 William Merritt Sale, Jr., Ph.D., Goldwin Smith Professor of English Literature  
 Edwin Ernest Salpeter, Ph.D., Professor of Physics and Astrophysics.  
 Miriam M. Salpeter, Ph.D., Associate Professor, Section of Neurobiology and Behavior, Division of Biological Sciences  
 Mario D. Saltarelli, Ph.D., Assistant Professor of Linguistics  
 Gerard Salton, Ph.D., Professor of Computer Science  
 Harold Eugene Samuel, Ph.D., Associate Professor of Music  
 Duane Paul Sather, Ph.D., Assistant Professor of Mathematics  
 Benjamin B. Schaffer, Ph.D., Visiting Professor of Government  
 Stephen Hoel Schanuel, Ph.D., Assistant Professor of Mathematics  
 Alfred Harry Schatz, Ph.D., Assistant Professor of Mathematics  
 Harold Abraham Scheraga, Ph.D., Sc. D., Todd Professor of Chemistry  
 Margaret Ann Seager, A.B., Instructor in Chemistry  
 Harry Wilbur Seeley, Jr., Ph.D., Professor, Section of Microbiology, Division of Biological Sciences  
 Richard Thomas Selden, Ph.D., Professor of Economics  
 Karl-Ludwig Selig, Ph.D., Hinchliff Professor of Spanish Literature  
 Martin F. Semmelhack, Ph.D., Assistant Professor of Chemistry  
 Alain Sez nec, Diplome d'études supérieures, Associate Professor of Romance Studies  
 Harold E. Shadick, M.A., Professor of Chinese Literature<sup>1</sup>  
 Mark Frank Shareffkin, B.S., Instructor in Physics  
 Lauriston Sharp, Ph.D., Professor of Anthropology  
 Robert William Shaw, Ph.D., Professor of Astronomy  
 William David Shaw, Ph.D., Assistant Professor of English  
 George F. Sheldon, M.A., Lecturer in Linguistics  
 Ian Wingate Shepherd, Ph.D., Instructor in Physics  
 Michael Shinagel, Ph.D., Assistant Professor in English  
 Sydney S. Shoemaker, Ph.D., Associate Professor of Philosophy<sup>3</sup>  
 James T. Siegel, B.A., Assistant Professor of Anthropology and Asian Studies  
 Sandra Frances Siegel, M.A., Instructor in English  
 Michell Joseph Sienko, Ph.D., Professor of Chemistry  
 Albert John Sievers, III, Ph.D., Assistant Professor of Physics  
 Joel H. Silbey, Ph.D., Assistant Professor of History  
 Robert Herman Silsbee, Ph.D., Professor of Physics  
 Leonard Stanley Silver, Ph.D., Assistant Professor of Mathematics

- Albert Silverman, Ph.D., Professor of Physics  
 Allan P. Sindler, Ph.D., Professor of Government  
 Walter J. Slatoff, Ph.D., Professor of English  
 Harold Robert Smart, Ph.D., Professor of Philosophy, Emeritus  
 G. Warren Smith, B.A., Assistant Professor of Chemistry  
 James Morton Smith, Ph.D., Professor of American History  
 Robert J. Smith, Ph.D., Professor of Anthropology  
 Thomas Andrew Sokol, M.A., Associate Professor of Music  
 Donald F. Solá, Ph.D., Associate Professor of Linguistics  
 Richard R. K. Sorabji, B. Phil., Associate Professor of Philosophy  
 Thomas Sowell, A.M., Assistant Professor of Economics  
 Frank Ludwig Spitzer, Ph.D., Professor of Mathematics  
 Edward Washburn Spofford, M.A., Assistant Professor of the Classics  
 Robert Lamb Sproull, Ph.D., Professor of Physics  
 Adrian M. Srb, Ph.D., Professor of Genetics, Section of Genetics, Development and Physiology, Division of Biological Sciences  
 Walter Hutchinson Stainton, Ph.D., Professor of Speech and Drama, Emeritus  
 George J. Staller, Ph.D., Associate Professor of Economics<sup>3</sup>  
 Donald S. Stark, M.A., Assistant Professor of Linguistics  
 Bert O. States, Jr., D.F.A., Associate Professor of English and Theatre Arts  
 Peter Cedric Stein, Ph.D., Associate Professor of Physics  
 Frederick C. Steward, Ph.D., D. Sc., F.R.S., Alexander Professor of Biological Sciences  
 Bernt Petter Stigum, Ph.D., Associate Professor of Economics  
 Harry Theodore Stinson, Jr., Ph.D., Professor of Genetics, Section of Genetics, Development and Physiology, Division of Biological Sciences  
 Marice W. Stith, M.A., Assistant Professor of Music  
 Michael Stocker, Ph.D., Assistant Professor of Philosophy  
 Fred Stollnitz, Ph.D., Assistant Professor of Psychology  
 Gordon Franklin Streib, Ph.D., Professor of Sociology  
 Sewall Cushing Strout, Jr., Ph.D., Professor of English  
 Nicholas L. Sturgeon, B.A., Assistant Professor of Philosophy  
 Joseph Mayone Stycos, Ph.D., Professor of Sociology  
 Richard Michael Talman, Ph.D., Associate Professor of Physics  
 Nicholas Tavuchis, M.A., Assistant Professor of Sociology  
 Wayne Edwin Thompson, Ph.D., Professor of Sociology  
 Brian Tierney, Ph.D., Professor of Medieval History  
 Mary Adrian Tinsley, M.A., Instructor in English  
 Judith M. Triestman, Ph.D., Assistant Professor of Anthropology  
 Barbara Troxell, M.S., Associate Professor of Music  
 Terence S. Turner, Ph.D., Assistant Professor of Anthropology  
 Victor W. Turner, Ph.D., Professor of Anthropology<sup>3</sup>  
 James Harvey Turnure, Ph.D., Associate Professor of the History of Art  
 David A. Usher, Ph.D., Assistant Professor of Chemistry  
 Jaroslav Vanek, Ph.D., Professor of Economics<sup>3</sup>  
 George M. von Furstenberg, Ph.D., Assistant Professor of Economics  
 Frederick Oswin Waage, Ph.D., Professor of the History of Art and Archaeology  
 Mack Walker, Ph.D., Associate Professor of German History  
 Robert John Walker, Ph.D., Professor of Mathematics  
 Hsien-Chung Wang, Ph.D., Professor of Mathematics  
 David W. Weiser, Ph.D., Visiting Professor of Chemistry  
 Harry Porter Weld, Ph.D., Professor of Psychology, Emeritus  
 John West Wells, Ph.D., Professor of Geological Sciences<sup>1</sup>  
 Winthrop Wetherbee, III, M.A., Assistant Professor of English

- David C. Wharton, Ph.D., Assistant Professor, Section of Biochemistry and Molecular Biology, Division of Biological Sciences  
 David Hywel White, Ph.D., Associate Professor of Physics  
 Herbert August Wichelns, Ph.D., Professor of Speech and Drama, Emeritus  
 Benjamin Widom, Ph.D., Professor of Chemistry  
 Harold Widom, Ph.D., Professor of Mathematics<sup>a</sup>  
 Charles F. Wilcox, Jr., Ph.D., Associate Professor of Chemistry  
 John Warren Wilkins, Ph.D., Assistant Professor of Physics<sup>2</sup>  
 L. Pearce Williams, Ph.D., Professor of the History of Science  
 Robin Murphy Williams, Jr., Ph.D., Henry Scarborough Professor of Social Science  
 David B. Wilson, Ph.D., Assistant Professor, Section of Biochemistry and Molecular Biology, Division of Biological Sciences  
 Kenneth Geddes Wilson, Ph.D., Associate Professor of Physics  
 Robert Rathbun Wilson, Ph.D., Professor of Physics<sup>a</sup>  
 William Abell Wimsatt, Ph.D., Professor of Zoology, Section of Genetics, Development and Physiology, Division of Biological Sciences  
 Arthur P. Wolf, Ph.D., Assistant Professor of Anthropology<sup>a</sup>  
 John Ulrich Wolff, Ph.D., Assistant Professor of Linguistics  
 Jacob Wolfowitz, Ph.D., Professor of Mathematics  
 Oliver William Wolters, Ph.D., Professor of Southeast Asian History  
 William Mooney Woodward, Ph.D., Professor of Physics  
 Albert Hazen Wright, Ph.D., Professor of Zoology, Emeritus  
 Ray Wu, Ph.D., Associate Professor, Section of Biochemistry and Molecular Biology, Division of Biological Sciences  
 Donald R. Yennie, Ph.D., Professor of Physics  
 Dana Bruce Young, M.A., Assistant Professor of Japanese Literature  
 Martie Wing Young, Ph.D., Associate Professor of the History of Art  
 Jerold J. Zuckerman, Ph.D., Assistant Professor of Chemistry

[This listing of the faculty of the College of Arts and Sciences does not necessarily include all appointments or resignations for 1967-68.]

# Index

- Admission, 6  
Advanced placement, 8  
Advising, 9  
American Studies, 28  
Anatomy, 55  
Anthropology, 28  
Arabic, 245  
Aramaic, 244  
Archaeology, 31, 32, 34, 37, 87, 155  
Art, History of, 149  
Asian Studies, 37  
Astronomy, 48  
Bachelor of Arts degrees, 13  
Behavior, 58  
Biochemistry, 60  
Biological Sciences, 50  
Biology, 53  
Botany, 61  
Burmese, 171  
Calendar, 2, 16  
Cebuano, 171  
Chemistry, 73  
Chinese, 171  
Cinema, 263  
Classical Civilization, 87  
Classics, 83  
Comparative Literature, 88  
Computer Science, 93  
Course changes, 9  
Curriculum of the College, 9  
Czech, 173  
Distribution requirements, 11  
Dutch, 173  
Ecology, 65  
Economics, 98  
English, 107  
English as a second language, 173  
Entrance requirements, 6  
Faculty, 271  
French, 174  
Freshman Humanities Program, 22  
Freshman seminars, 268  
Geological Sciences, 121  
Genetics, 68  
German, 181  
Government, 128  
Grades and academic standing, 14  
Graduation requirements, 10  
Greek, 83  
Hebrew, 244  
Hindi, 188  
History, 137  
Hours per term, 9  
Incomplete mark, 14  
Indonesian, 189  
Interdepartmental courses, 264  
Italian, 190  
Japanese, 191  
Javanese, 192  
Language requirement, 12  
Latin, 85  
Latin American Studies, 264  
Leaves of absence, 15  
Libraries, 18  
Linguistics, 192  
Major requirements, 11  
Mathematics, 156  
Microbiology, 70  
Military training, 18  
Music, 209  
Musical organizations, 213  
Neurobiology, 58  
Numbering of courses, 10  
Philosophy, 214  
Physical education, 12  
Physics, 220  
Physiology, 55  
Portuguese, 197  
Premedical program, 17  
Psychology, 232  
Quechua, 198  
Registration in courses, 9  
Residence requirements, 10  
Romance Studies, 242  
Russian, 198  
Scholarships, 18  
Secondary school teaching, 16  
Semitic languages and literatures, 243  
Serbo-Croatian, 202  
Sinhalese, 202  
Six-Year Ph.D. Program, 264  
Society for the Humanities, 269  
Sociology, 247  
Spanish, 203  
Speech, 259  
Summer session credit, 15  
Tagalog, 207  
Telugu, 207  
Thai, 207  
Theatre Arts, 258  
Transfers, 8  
Urdu, 208  
Vietnamese, 208

## CORNELL UNIVERSITY ANNOUNCEMENTS

The Cornell Announcements are designed to give prospective students and others information about the University. The prospective student should have a copy of the General Information Announcement; after consulting that, he may wish to write for one or more of the following Announcements:

New York State College of Agriculture, College of Architecture, College of Arts and Sciences, School of Education, College of Engineering, New York State College of Home Economics, School of Hotel Administration, New York State School of Industrial and Labor Relations, Center for International Studies, Officer Education (ROTC), Summer Session.

Undergraduate preparation in a recognized college or university is required for admission to the following Cornell divisions, for which Announcements are available:

Graduate School, Law School, Medical College, Cornell University-New York Hospital School of Nursing, Graduate School of Nutrition, New York State Veterinary College, Graduate School of Business and Public Administration.

Requests for the publications listed above may be addressed to

**CORNELL UNIVERSITY ANNOUNCEMENTS**

Edmund Ezra Day Hall, Ithaca, New York 14850

(The writer should include his zip code.)

## CORNELL UNIVERSITY ANNOUNCEMENTS

Supplement to Volume 58, Number 17, April 20, 1967

### ANNOUNCEMENT OF THE COLLEGE OF HOME ECONOMICS

**Scholastic Minimums:** The following statement supersedes the statement regarding minimum scholastic requirements which appears on page 48 of the 1967-68 *Announcement of the College of Home Economics*:

The College is seeking students who have high academic potential as indicated by their College Board test scores and who have demonstrated high achievement as indicated by their high school records. The freshman class entering in the fall of 1966 had a median SAT verbal score of 614 and mathematical score of 627; 61 percent of the freshmen had SAT verbal scores of 600 or higher, and 65 percent had mathematical scores of 600 or higher. Ninety-one percent were in the top fifth of their high school graduating classes.